TECHNOLOGY DEPARTMENT

MARCH 1950

The Paper Industry

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DETROIT

Nalco #71 PAPER MILL ANTIFOAM

- **CONTROLS** foam and bubble formation over wide pH range—4.0 to 9.5!
- **ELIMINATES** bubble formation on wires.
- **EASY** to mix and feed.
- **NO EFFECT** on other materials in the furnish.
- **ECONOMICAL**—Average cost less than 15¢ PER TON of paper produced.

NALCO 71 not only positively eliminates foam and bubble formation in paper machine systems without affecting the furnish, but it also *stays in the water.* This means that remarkably small dosages of 71 efficiently prevent foam overflows, wadding, uneven caliper and other foam difficulties. Churning of Jordans, action of stock pumps and the flow of stock—the very things that cause foaming in untreated systems—all promote better action of Nalco 71!

Complete information on Nalco 71—and on other Nalco Chemicals for paper manufacturing use will be furnished upon request. Write today for prompt action on a permanent solution for your foaming problems.

NATIONAL ALUMINATE CORPORATION
6232 West 66th Place
Chicago 38, Illinois
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THE Nalco SYSTEM
Serving the Paper Industry through Practical Applied Science

THE FUTURE OF YOUR PRODUCT IS IN THESE HANDS

wet-strengthen your paper with the UFORMITES

A million hands test your product—the hands of your customers' customers, who demand *wet strength* in paper.

To satisfy these ultimate users—and their suppliers—wet-strengthen your paper with the UFORMITES, quickly, easily at low cost. As little as $4 per ton of paper boosts wet Mullen values 300%, raises dry Mullen and fold values 10% to 30%, and increases wet rub and scuff resistance, and wet and dry tensile. No pretreatment, special equipment or special processing is necessary.

Full technical information on the UFORMITES is yours for the asking.

Write to Dept. PIP-1

OTHER CHEMICALS FOR THE PAPER INDUSTRY

RHOZYMES BB and E-5 —for enzyme conversion of starch.

TAMOL N —for effective pitch control—a dispersing agent for pigments.

TRITONS—Surface-active agents with a score of uses in paper manufacture—in caustic cooking of cotton fiber, as a dispersing agent for pigments and metallic soaps, emulsion-type coatings.

The Hydrosulfites—Reducing agents for stripping color from rag stock or for bleaching pulp.

HYAMINES—Deodorants for paperboard and glue bactericides.

UFORMITE, RHOZYME, TAMOL, TRITON, HYAMINE are trademarks, Reg. U.S. Pat. Off. and in principal foreign countries.

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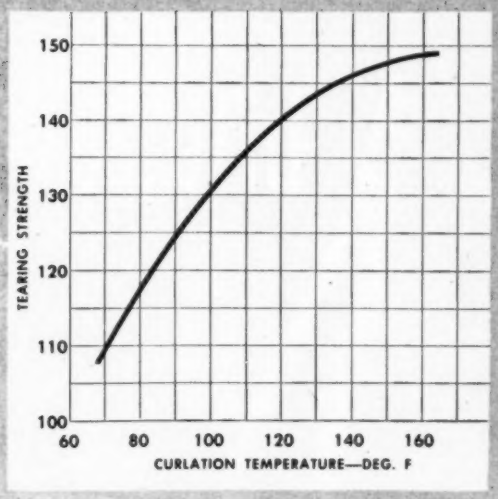
TEAR CURVE



Effect of Temperature During Curlation Using Power Consumption of 2.5 H. P. Days Per A. D. Ton on the Properties of

PREVIOUSLY UNDRIED NORTHERN UNBLEACHED SULPHITE PULP

TEST DATA

TEMPERATURE OF CURLATION °F	RAW*	70	120	160
FREENESS	835	835	845	856
MULLEN	70.8	62.1	52.6	37.8
TEAR	95	109	140	149
DENSOMETER	14.0	3.7	1.2	0.7

*WITHOUT CURLATION

NOTE: Description of the testing procedures employed by The Curlator Corporation laboratory will be provided upon request.

The CURLATOR† is a tool for altering the properties of pulp and paper to obtain qualities hitherto unachievable by mechanical means. The effects of CURLATION are controllable over a wide range by conditions of treatment. They vary with the raw material and may be described only in relation to a particular pulp.

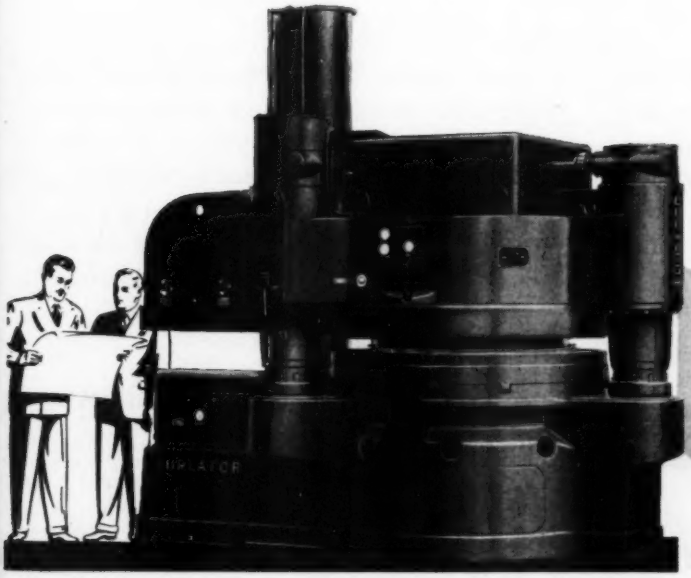
MAY CURLATION SOLVE YOUR PROBLEM?

CURLATION is a fully tested and thoroughly proved mechanical process. It not only produces a permanent change in the shape of pulp fibres, but also exerts a powerful de-shiving action, with negligible change in freeness.

The effects obtainable with CURLATION vary widely with the raw material and the conditions of treatment. In general, CURLATION tends to produce an easier beating pulp from which water is more easily removed.

Sheets of CURLATED pulp exhibit a more even textured matte appearance. In addition, the range of qualities obtainable from a given pulp is broadened.

Other important advantages exist. Your inquiries are invited.



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Corporation
565 BLOSSOM ROAD · ROCHESTER 10, NEW YORK

†T. M. Reg.—Curlator Corporation, Rochester, N. Y.

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Mathieson Chemical Corporation
MATHIESON BUILDING,
BALTIMORE 3, MARYLAND

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The Paper Industry

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THE PAPER INDUSTRY is indexed regularly in **Engineering Index** and **Industrial Arts Index.** An index to each volume is issued annually by the publisher as Section Two of the April number.

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IN BOILER BLOW-DOWN SERVICE

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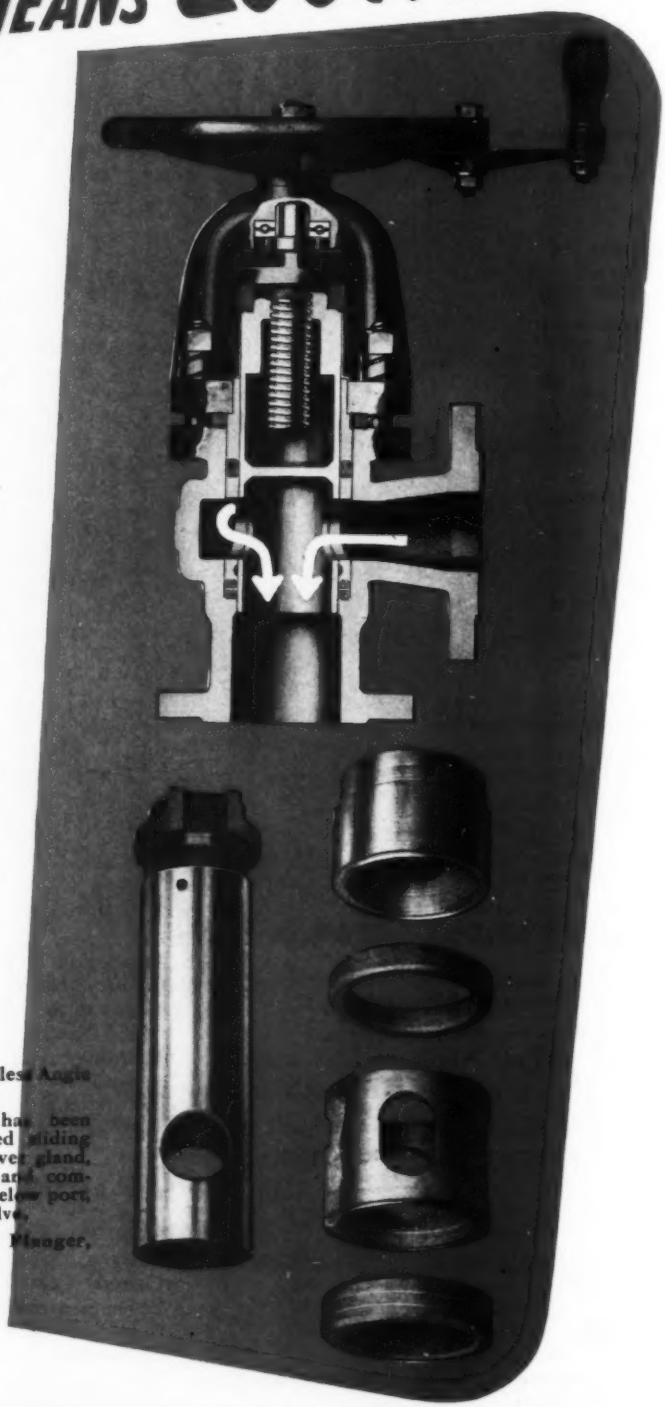

(*Above*)—Cross section of Seatless Angle Valve, flanged.

OPERATION: After valve has been closed, shoulder on balanced sliding plunger contacts upper follower gland, forcing it down into body and compressing packing above and below port, making an absolutely tight valve.

(*Below*)—Balanced Sliding Plunger, Packing Rings and Glands.

YARWAY BLOW-OFF VALVES

Hooperwood's method of calendering the new S/AA Dryer Felt eliminates all protruding fibres so paper stock will not adhere to the felt and cause it to "fill up." Also the exceptionally smooth, twill-like surface will not mark the sheet.

These advantages are but two of many which S/AA offers. Mill men also like the blend of asbestos and cotton fibre which gives S/AA felts heat resistance *plus* absorbency. Good drainage is afforded by all asbestos surface warps weaving directly through the felt.

Important, too—high tensile yarns give longer life, lower dryer felt cost per ton.

Today, write for a sample of S/AA.

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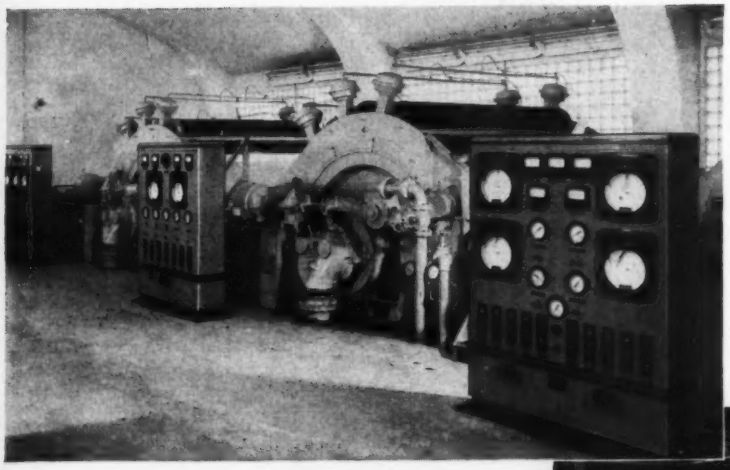
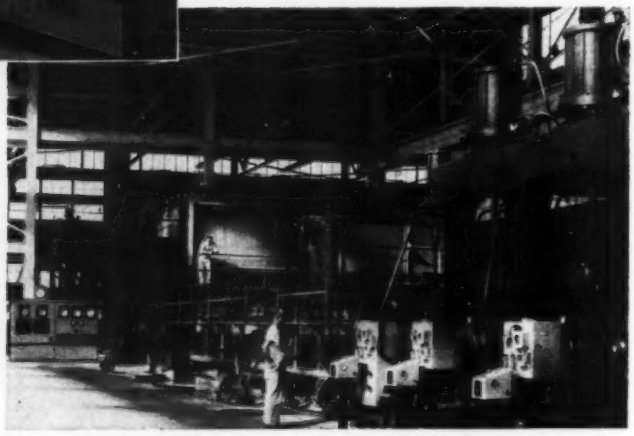
HOOPERWOOD DRYER FELTS



pH control in your bleach plant will improve quality and save chemicals.

pH control on your paper machine will improve and maintain quality and permit higher machine speeds.



Better Mill operation... Better finished product...

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Wherever pH is an important factor in your process, automatic measurement or control by Foxboro instrumentation can bring big improvements in results. It means brighter pulp in bleaching with minimum chemical usage . . . better quality paper at higher machine speeds . . . more reliable machine operation . . . or any of a number of other advantages.

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Beckman glass electrodes are the primary measuring elements of Dynalog pH systems. They are suitable for use in nearly all types of liquids, regardless of color, viscosity, rate of flow, suspended solids, oxidizing or reducing agents.

WRITE FOR COMPLETE INFORMATION

Whatever your requirements, there is a Foxboro Dynalog pH System to meet them. Consult your nearest Foxboro representative — or write for Bulletin 430. **The Foxboro Company, 158 Neponset Ave., Foxboro, Mass., U.S.A.** Branch offices in principal cities.

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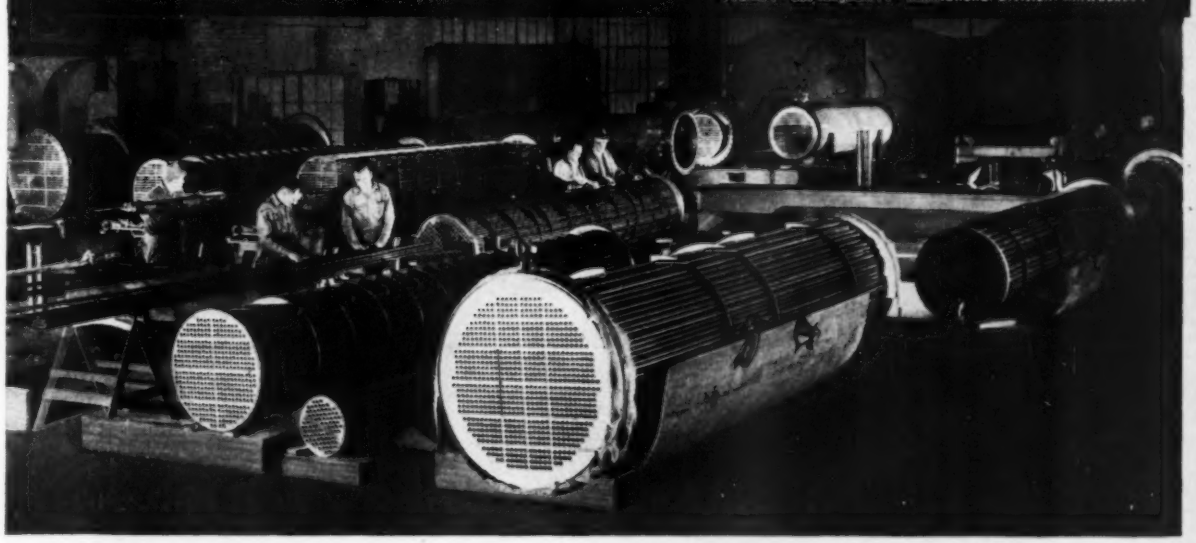
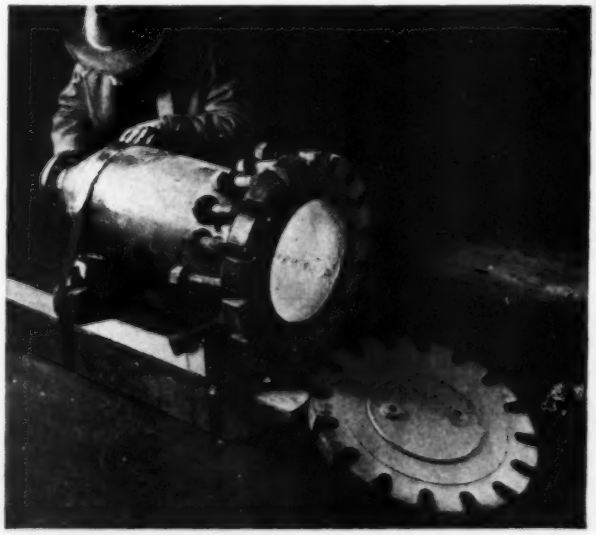


NO JOB IS TOO BIG—OR TOO SMALL. Heat exchangers for every service—large or small, hot or cold, high or low pressures—are engineered and built by A.O. Smith. Customers benefit from accumulated years of A.O. Smith experience in the use of a wide variety of materials.

NO PIG-IN-A-POKE HERE. The customer and A. O. Smith collaborated in the building of this SMITHway alloy-lined experimental pilot unit so that the alloy lining, selected by laboratory tests for corrosion service, could be subjected to process test-runs before the full-size production units were manufactured.



SAFEGUARDING THE CUSTOMER'S INVESTMENT. After the selection of the alloy lining, A.O. Smith makes doubly sure that it conforms to specifications, and does not contain any undesirable residual elements, by spectro-chemically analyzing sample coupons of the lining before releasing it for manufacture into the vessel.

A. O. Smith Corporation, Dept. PI-350
Milwaukee 1, Wisconsin

Without obligation, send us the latest A. O. Smith Vessel Bulletins:

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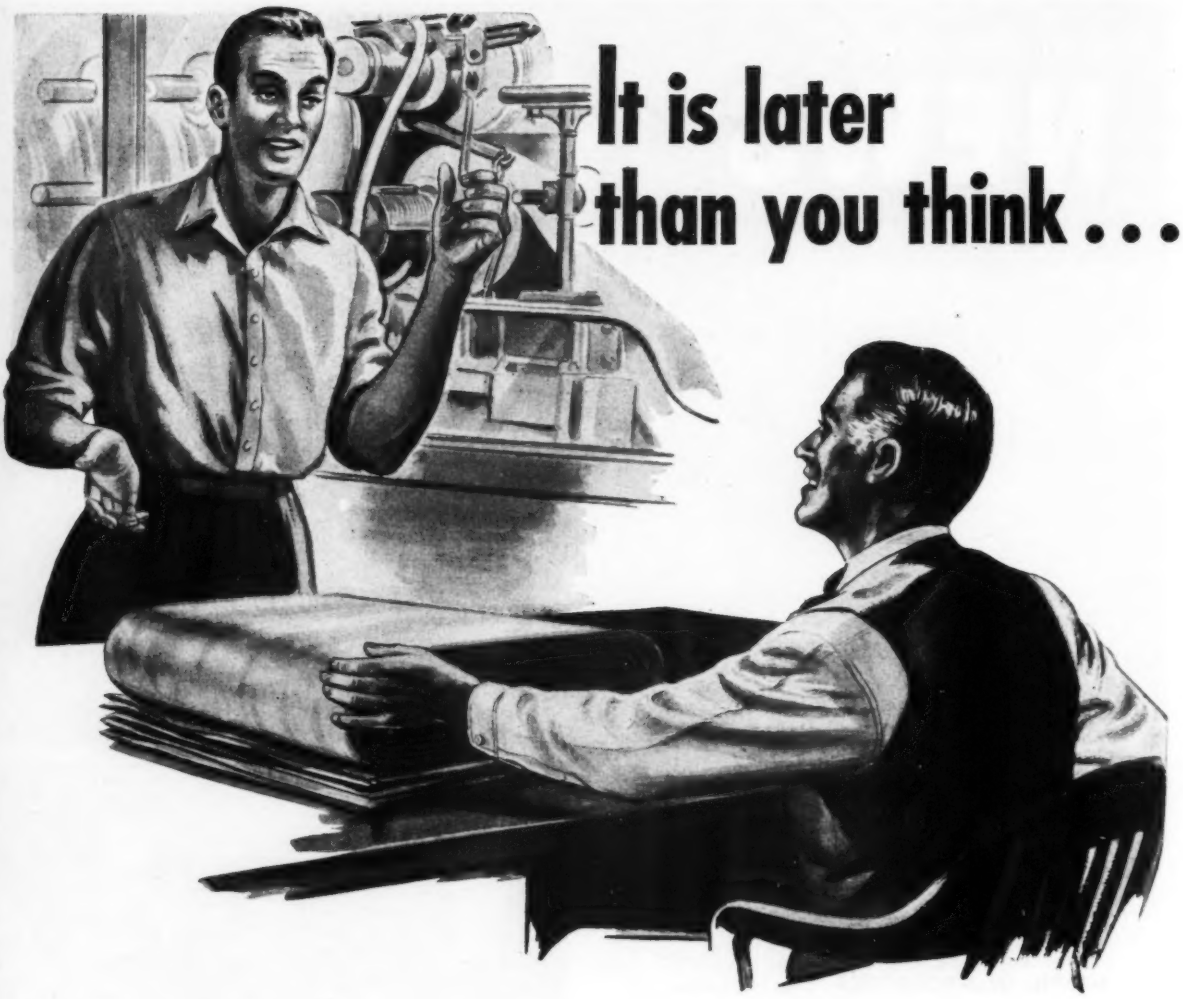

It is later than you think . . .

SUPERINTENDENT: Bill, it's time to take off that wet felt and replace it with a new Hamilton.

MACHINE TENDER: But Boss, that felt isn't worn out. We could get a lot of production from it by slowing down the machine.

SUPERINTENDENT: Sure you could. But you would get a lot of felt marks into your sheet, too.

MACHINE TENDER: We will smooth them out at the drier rolls.

SUPERINTENDENT: Listen, Bill. The only way to get felt marks out of a sheet is to change felts before matted nap and clogged mesh can put them into it.

MACHINE TENDER: You've said a mouthful, Boss.

From the thinnest tissue to the heaviest board there is a Hamilton Felt that will last longer before changing is needed.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

• Miami Woolen Mills •

Hamilton Felts

• Established 1858 •

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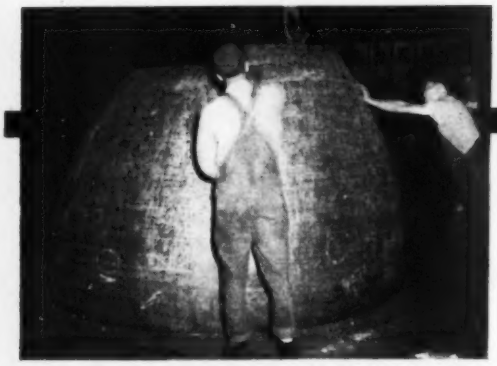
1. Below: Fitters assembling bottom of digester. The seam at the left has been tack welded.



2. Below: Welder working on one of the longitudinal seams in the bottom.

It takes CRAFTsmanship to make a KRAFT mill digester

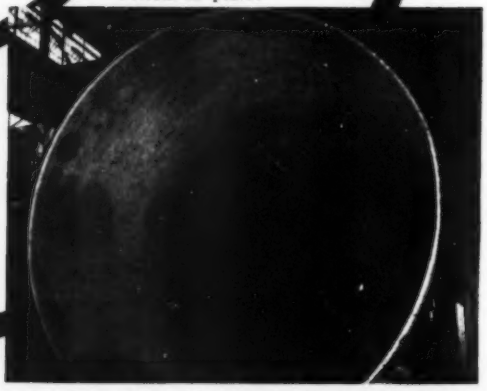
The accompanying illustrations show an important phase of Chicago Bridge "craftsmanship" in fabricating a welded steel digester.

But even the best workmen (and we have them) couldn't make digesters without adequate facilities (so we have them too). Our shops are equipped to do x-raying and stress-relieving to code requirements, experienced in fabricating special corrosion-resistant materials and strategically located to give prompt service.

Write our nearest office for quotations when you need digesters or other steel plate structures.

3. Below: Two welded sections of the bottom of the digester being fitted together.

4. Below: The cylindrical shell of the digester with bottom in place.



5. Left: Loaded for shipment to the Australian Paper Manufacturers Ltd., mill at Maryvale, Australia. This digester was built entirely of twenty per cent stainless clad material.

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OIC

PACE SETTER IN VALVES

Engineered FOR LASTING SERVICE

200 LB. UNION BONNET BRONZE GATE VALVE

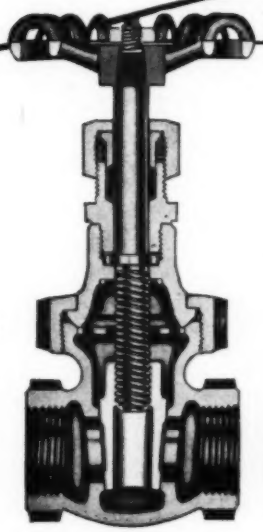
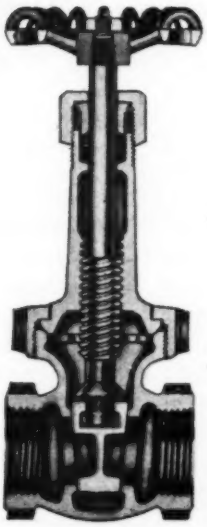


FIGURE NO. 7208
Non-rising stem, integral seat, OIC nickel alloy solid wedge, screwed end type.

FIGURE NO. 7200
Rising stem, integral seat, OIC nickel alloy solid wedge, screwed end type.



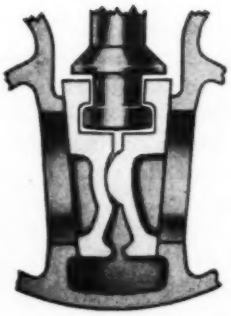


FIGURE NO. 7202
OIC Nickel Alloy double taper wedge automatically adjusts itself to its seat as valve is closed.

DESIGN: Solid wedge, rising stem; double-tapered wedge, rising stem; or solid wedge, non-rising stem. Integral seat, screwed end design.

BODIES: Of Steam Bronze ASTM B61, with average tensile strength of 40,000 lbs.

BONNETS: Also of Steam Bronze, with seal on lower end which mates with corresponding surface on stem to allow valve to be packed while fully open and under pressure. Condensing chamber below the stuffing box to keep packing cooler on high-temperature lines.

GATES: Of two types.

SOLID WEDGES are OIC copper nickel alloy, are of I-beam design, and reversible.

DOUBLE-TAPERED WEDGES fit into same bodies, but have ball and socket design, allowing wedge automatically to adjust itself to seat as valve closes. Accurately machined guides on both types, and tapered seating surfaces to give full contact with body seats as the wedges wear.

STEMS: Of manganese bronze, with double Acme thread for quick traverse of the wedge. Diameters sufficient to bear torsional loads greater than strongest hand pressure and to withstand severe operating conditions.

SEATING SURFACES: Machined to five-degree, self locking angle.

HANDWHEELS: Of ventilated malleable iron, finished in black enamel.

RATINGS: For steam at 200 lbs., 550 degrees F.; for cold water, oil, or non-shock gas service at 400 lbs. Shell tested at 500 lbs. and seat tested at 400 lbs.

SIZES: One-fourth inch to three inches currently available.

Special **INTRODUCTORY OFFER**

Check this 200-lb. Union Bonnet Bronze valve. Send us the size, and we'll deliver you a sample on memo billing. Keep it 30 days, take it apart, analyze it, test it. After you've examined all its superiorities, you may return it, if you wish, for full credit.

OIC **VALVES**

THE OHIO INJECTOR CO.
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BRONZE • CAST STEEL • FORGED STEEL • IRON

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FOR COATINGS OF

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on Insulation Board

With Kelsize as your surface control agent, you get insulation board coatings that are uniform in adhesive and covering qualities. Coatings stay on the surface because Kelsize controls selective absorption . . . helps prevent the binder from being absorbed by the sheet faster than the pigment.

Kelsize also gives you these advantages:

. . . Assures uniform pigment distribution
. . . Controls pigment migration
. . . Reduces tendency toward mottling
. . . Gives uniform color and texture to finished coating

Kelsize can be used in coatings applied from either the wet or dry end of the machine. It is economical and easy to use; soluble in hot or cold water; and only a small amount is needed to produce consistently superior results.

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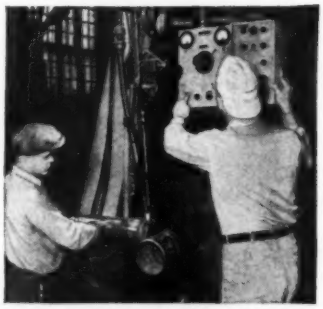
PREFABRICATED PIPING IS IMPROVED

Closeup of the weld being laid. Note smoothness of the overlapping beads.

Movable bridge transports welding head and equipment over the various work rotating machines. Operator is shown adjusting flow of flux that submerges the arc; helper cleans weld with chipping hammer as it rotates past him.

by MIDWEST MACHINE WELDING

WITH SUBMERGED ARC



Operator stops machine at completion of weld by simply pressing button. Push button controls position welding head exactly over work clamped in rotating machine.

Better welding is assured by this Midwest development because the "human element" has been eliminated for all practical purposes. Aside from work positioning, the operator simply starts and stops the machine; his helper chips off the slag . . . all else is automatic.

Quality of the weld is improved because the machine follows the predetermined procedure *exactly . . . everytime.* The puddle is larger and the arc is better shielded and controlled. The possibility of locking up slag is minimized while undercutting is practically impossible. The greater number of beads is a further improvement.

This application equipment, developed and built by Midwest for use in its own fabricating plants, is representative of the modern facilities used by Midwest to assure better piping.

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PIPING FABRICATORS AND CONTRACTORS

4 PLANTS ARE BETTER THAN 1

POWELL VALVES have *these* "ABILITIES" to a high degree:

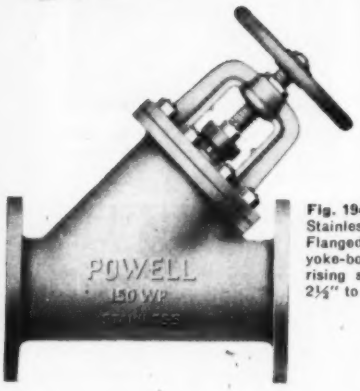

Fig. 1944—Large 150-pound Stainless Steel "Y" Valve. Flanged ends, bolted flanged yoke-bonnet, outside screw rising stem. Made in sizes 2½" to 12", inclusive.

ADAPTABILITY. The Powell Line is so complete* that there's a Powell Valve especially adapted, in design and material, to meet the requirements of each and every industrial flow control service.

DURABILITY. Powell Valves are noted for their durability. That is because each Powell Valve is built to stand up under the specific flow control conditions to which it may be subjected.

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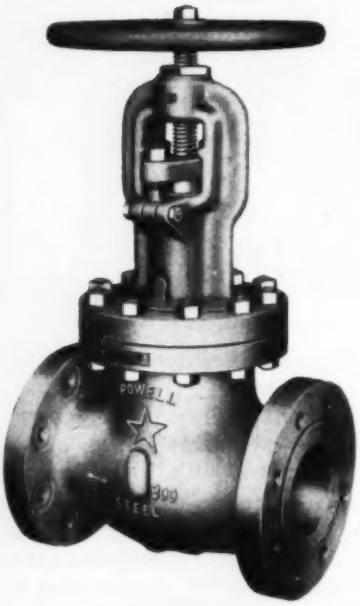

Fig. 3031—Class 300-pound Cast Steel Globe Valve. Has flanged ends, bolted flanged yoke and outside screw rising stem.

Fig. 559 — 125-pound Iron Body Bronze Mounted Swing Check Valve. Flanged ends bolted flanged cap and regrindable, renewable bronze seat and disc.

Fig. 375— 200-pound Bronze Gate Valve. Screwed ends, union bonnet, inside screw rising stem and renewable "Powellium" wear-resisting nickel-bronze disc.

Fig. 1793 — Large 125-pound Iron Body Bronze Mounted Gate Valve. Sizes 2" to 30", incl. Has outside screw rising stem, bolted flanged yoke and tapered solid wedge.

***The Complete Powell Line includes Globe, Angle, "Y", Gate, Check, Non-return, Relief and Flush Bottom Tank Valves in Bronze, Iron, Steel and a wide range of Corrosion-resistant metals and alloys.**

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For information about dyes for corrugated shipping containers ...or for help on *any* coloring problem... consult our Technical Staff. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Div., Wilmington 98, Del.

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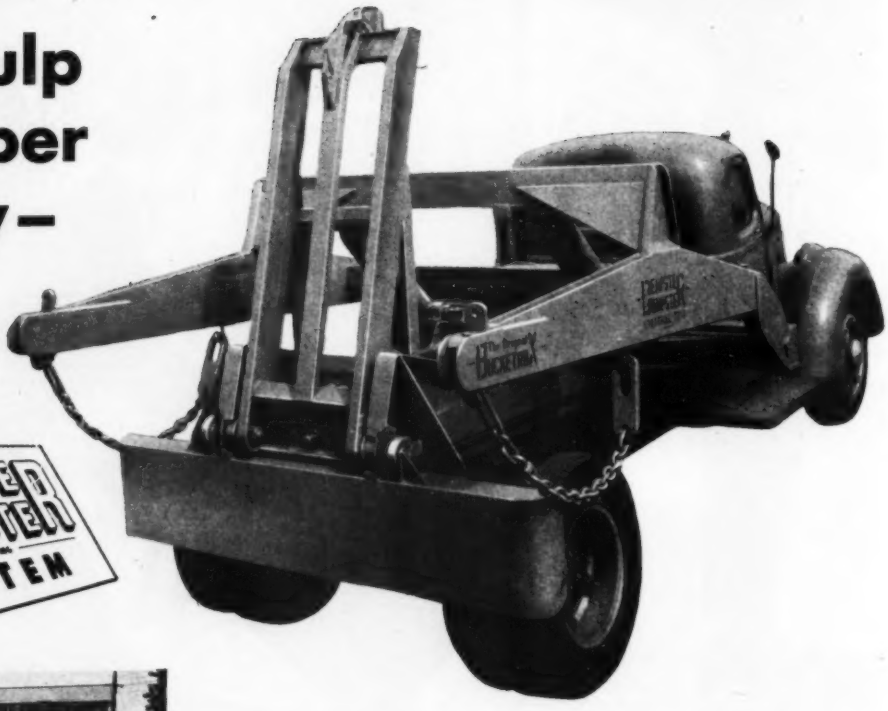

DEMPSTER DUMPSTER SYSTEM

46 Dempster-Dumpster Truck Hoisting Units Are Handling 849 Containers!

In dozens of pulp and paper plants throughout the United States, the Dempster-Dumpster System of materials handling is stepping-up production . . . increasing efficiency . . . and saving thousands of dollars annually! Today, less than 10 years after the first Dempster-Dumpster unit was installed in a paper plant, there are 46 Dempster-Dumpster Truck Hoisting Units handling 849 containers throughout the paper industry. These containers, in sizes up to 10 cu. yds., are handling all types of materials—liquids, trash and rubbish, raw materials or finished product. Only 13% of the plants served by the Dempster-Dumpster System have more than one hoisting unit. In one plant one truck hoisting unit serves 58 containers. In the simple Dempster-Dumpster System one truck hoisting unit and driver serve any required number of detachable steel containers. These containers are placed at convenient materials accumulation points outside and inside plants. The hoisting unit makes scheduled rounds, picking up each pre-loaded container, and hauls it to its destination. If materials are to be dumped, it is done automatically by hydraulic controls at driver's seat. It will pay you to investigate the Dempster-Dumpster System. Write now to Dempster Brothers, Inc. for literature and complete information.

Pictured at left is a standard drop bottom type container in three stages of operation—on the ground, in carrying position, and dumping.

DEMPSTER BROTHERS
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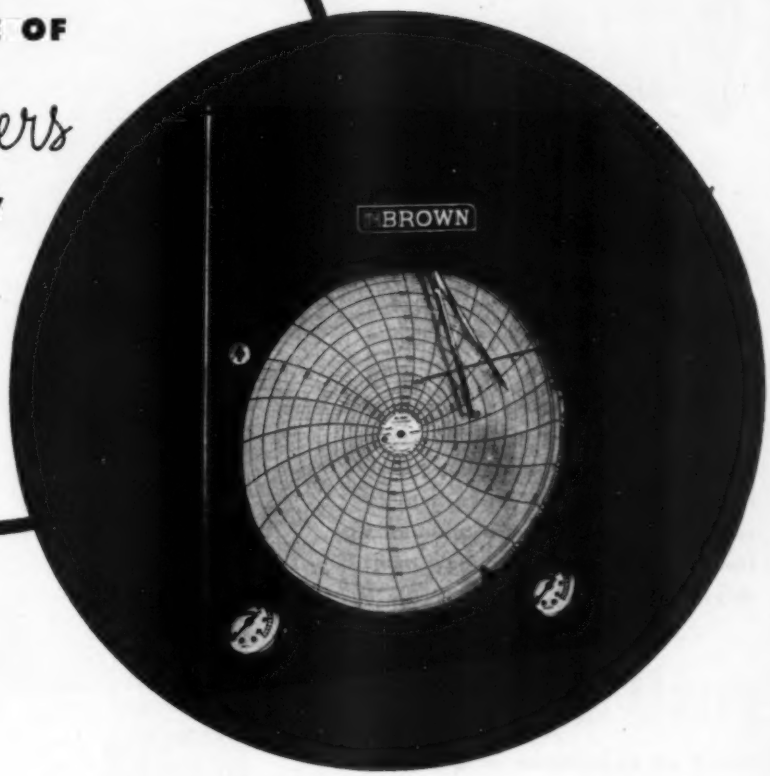
THE COMPLETE AND VERSATILE BROWN LINE OF

Flow Meters

MEETS EVERY PAPER INDUSTRY NEED



SINCE no single flow metering or controlling system can meet all the needs of the Paper Industry . . . Brown offers a complete line of mechanical (bellows and manometer), electrical, integrating type instruments to make it easy for you to select the best system for each application.

Typical is the acceptance in the industry for the Brown Electric Flow Meter, pictured above. Paper men report that this instrument requires a minimum of cleaning . . . that the absence of electrical contacts inside meter body reduces maintenance . . . that its interchangeable range tubes make it easy to accommodate process changes without replacing orifice plates . . . that the meter body can be located close to the point of measurement and the controller close to the operator.

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FOR THE PAPER INDUSTRY

TAKES IT AWAY AS FAST AS IT COMES

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No matter how your pulpwood arrives at the mill, Jeffrey Chain Conveyors provide a very efficient means of taking it away. Hundreds of installations in mills throughout the Pulp and Paper Industry have proven that these sturdy single or multiple strand conveyors can really take it, and day after day, too.

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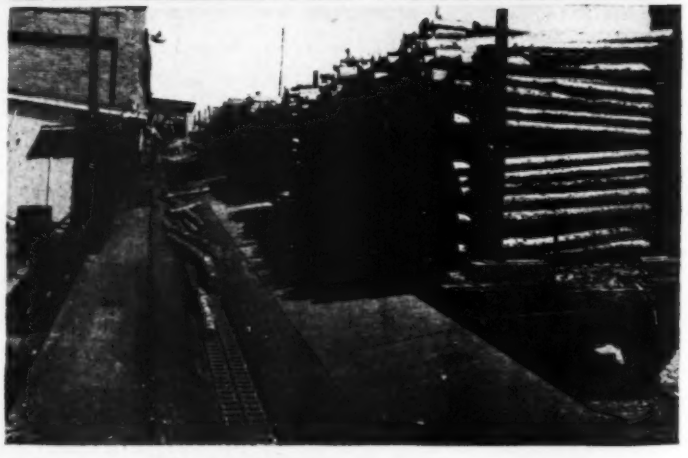
Years of experience in designing and building specialized equipment for handling and processing operations in almost every industry has given Jeffrey engineers the knowledge and skill to recommend the right set-up for YOU. If you want to speed production — improve your handling methods . . . call upon Jeffrey. Do it today.



FROM CARS

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Being a V-belt Drive, it's a steadier, more positive Drive — gives you a smooth running machine. Equipped with hypoid gears, it delivers a maximum of power.

This Drive also has a new design in bearing suspension that makes adjustment of the bearings and gears easy. And a gear oil pump gives you positive lubrication of the gears and bearings. This is definitely a new Drive, resulting from eighty years' experience in the manufacture of paper mill machinery.

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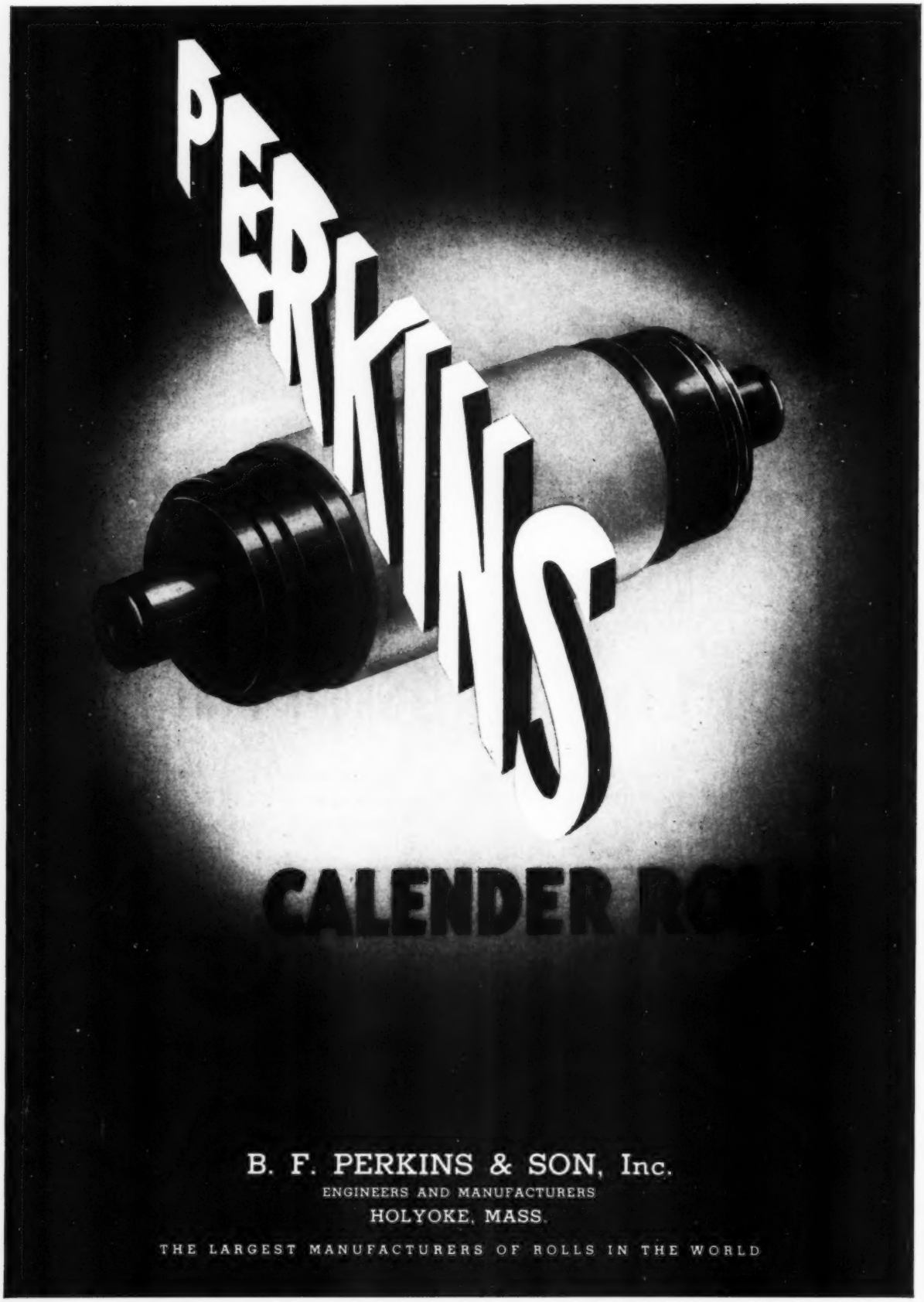
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at 200 lbs. Working Pressure!

Steam Hose users have long been stymied by the costly problem of tube-swelling during normal service life of ordinary hose. They turned to BWH for the solution.

BWH came up with the answer . . . CONCORD #20! In building this revolutionary new hose, the rubber tube was first locked securely between two braids of high tensile steel wire. The cover and static wires were added. Then the new construction was subjected to a *continuous flow* of 200 lbs. working pressure *for over 2000 hours!* At the end of this record-smashing test, the tube showed no evidence of hardening or swelling! Couplings were re-attached without the slightest difficulty because the original inside diameter of the tube was maintained throughout!

In addition to its many other advantages, Concord #20 features a specially treated cover which protects it against oil, grease, heat, strong sunlight and abrasion!

Ask your BWH distributor to demonstrate the whip-like flexibility of this rugged new hose. Check the braids of high-tensile steel wire which give Concord #20 strength without bulk. Concord #20 Steam Hose does the job without breaking the operator's back . . . is assurance against "flash" explosions . . . and, from the inside out, is your guarantee of unequalled service life.

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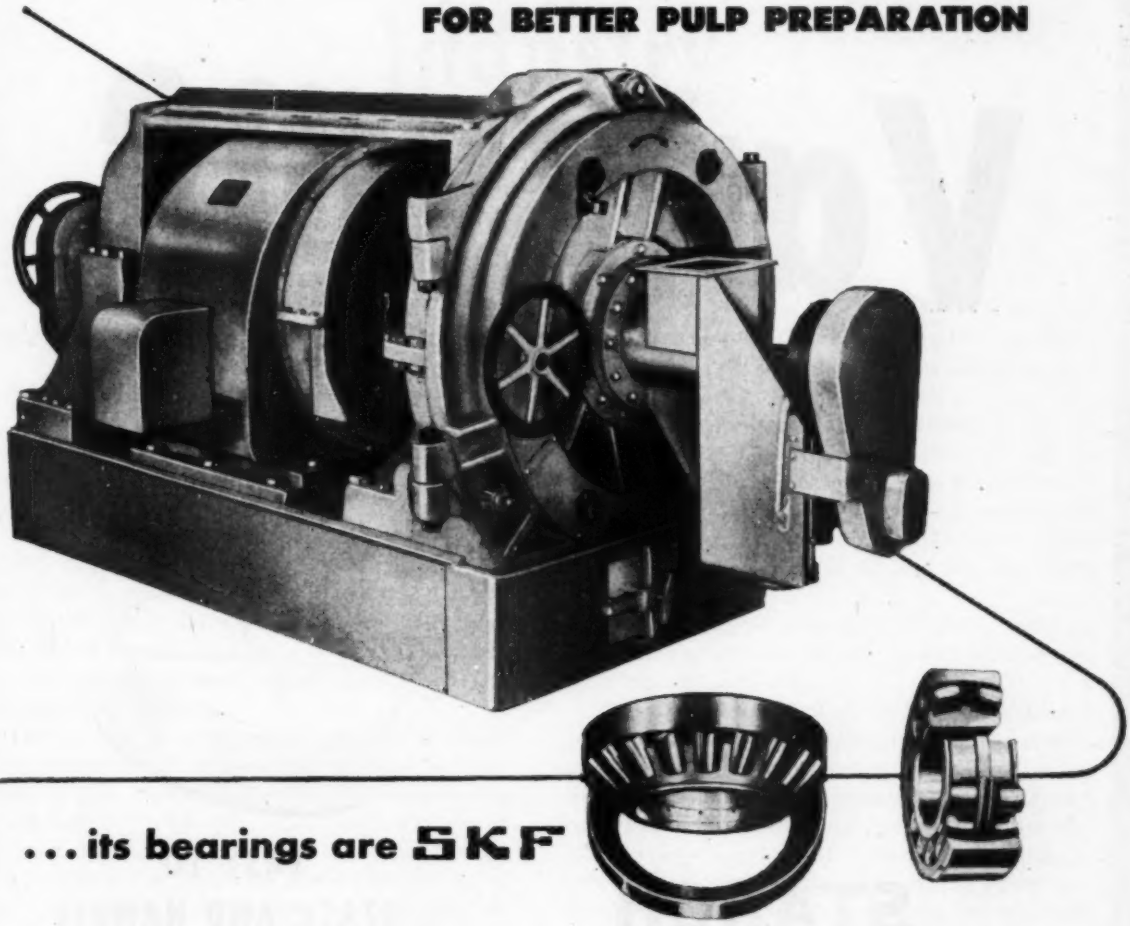

...its bearings are SKF

The Sprout-Waldron & Co., Muncy, Pa., new 36-2 Rotary Disc Refiner embodies all the refinements necessary to the uniform production of high quality pulp. The shaft is of extra large diameter, high tensile special steel. Bearings are SKF Spherical Roller Bearing in the disc end . . . SKF Spherical Roller Bearing and SKF Spherical Roller Thrust Bearing in the thrust end.

Choice of SKF for any precision-built machine is only natural. All SKF Bearings are manufactured to the most rigid standards of quality . . . are inspected microscopically and electronically . . . are the result of intensive and continuing engineering and metallurgical research. Preferred by all industry for 8 good reasons, SKF always puts the right bearing in the right place. SKF Engineers will gladly work with you in designing for greater efficiency, dependability and economy. *SKF Industries, Inc., Philadelphia 32, Pa., the Pioneers of the Deep Groove Ball Bearing—Spherical Roller Bearing—Self-Aligning Ball Bearing.* 7083

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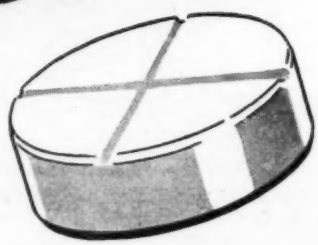
Vanzyme discs



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The Paper Industry

March 1950

The Dawn Came Up Like Thunder

THE RESULT OF the British election last month was stunning in that the Labor Party lost 140 seats in Parliament. This reversed the trend toward more Socialism in that country's experiment with government controls.

It was a staggering setback to the Labor Party whose majority in the last Parliament was 148 seats. While the Conservative Party did not win, the Labor Party cannot continue to hold office without a truce with the Conservatives. That means that the Labor Party may fall at an early date and another election ensue.

The eyes of the civilized and uncivilized world were centered with intense interest upon the outcome of that election, for it meant much to the whole world. To the people of North America it meant most because being the most progressive and prosperous on earth, its citizens have most to lose. The people of this country are now alert to the fact that the clearcut issue in the forthcoming elections in this country is Socialized-Labor Party-Government Control versus Free Enterprise and Liberty.

That the Administration in Washington is labor controlled is proved by the fact that our whole economy at this writing is facing prostration because of labor strikes. Labor wants political control.

Millions of our citizens are facing idleness, and billions of dollars are being lost because the Administration will not use its powers to protect all its citizens for fear it will lose the labor vote in the elections this year. What a silly procedure for an Administration which opposes class distinction to then champion labor at the expense of its entire citizenry.

It was this fallacy that brought about the recent rebuke to the British Labor Government; and the present pro-Labor-Socialistic-Government-control party in this country will sustain a similar rebuke.

More and more people are becoming enlightened each day as to the hideous iniquities imposed upon them under socialized government control. For a case in point consider the way it affects the paper industry in Britain. The chairman of Bowater Paper Corporation Ltd., describes how the Labor Government controls his operations:

"The government is sole purchaser of all our raw materials; it determines the price we pay for them. It tells us what we may use these raw materials for, and even lays down the percentage of these raw materials our product will contain. It then tells us to whom we must sell and sets our selling prices to boot."

How many paper mills in this country and Canada want any such uneconomic, unjust working controls imposed upon them?

These liquidating controls do not apply alone to the paper industry in Britain but are imposed upon a whole galaxy of other producers in other industries—in commerce and in agriculture. They are not applicable alone to large corporations but also to the operation of small concerns embracing the great middle classes—the butcher, the baker and the butterfat maker. All of them are groaning beneath a labyrinth of redtape directives and controls, over a minutiae of processing procedures so senseless and wearying as to cause abandonment of enterprise.

All now realize that these controls are put in force not for the good of Industry but for the support of a constantly growing army of nitwit bureaucrats living on the taxpayers' pay.

It has now become obvious that there can be no incentive to enterprise under any devisible system of Socialistic-Labor control. That is the meaning of the revulsion to the five-year experiment which English people allowed to be imposed upon them.

They are now turning back from the grievous mistakes they have made. It will take them a generation of hardest effort to retrieve the losses their economy has suffered.

In the face of these bitter failures and experiments in Socialistic-Labor Party-Government Control, all of which have been futile in New Zealand, Australia and now Great Britain—do the people of these United States propose to allow a socialized labor party to impose similar controls upon them?

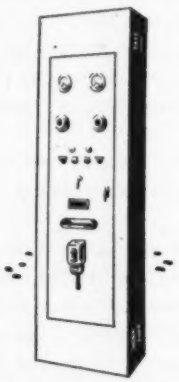
We do not believe they do!

One of a Series *from Western Precipitation Corporation—pioneers of the commercial application of* COTTRELL *and now selling* COTTRELL *recovery equipment in all parts of the U.S.A. and foreign countries.*

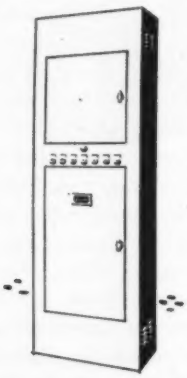
Various Methods of Energizing COTTRELLS *Make Experience a Vital Factor*

The many and varied factors affecting the operating efficiency of a COTTRELL Precipitator make experience and "know how" of the greatest importance in designing and installing COTTRELL equipment. Western Precipitation Corporation—*the organization that pioneered the commercial application of* COTTRELLS—has had over 39 years of first-hand experience in developing and perfecting the various elements that make up a complete COTTRELL installation, and these years of experience assure maximum performance from every Western Precipitation COTTRELL installation.

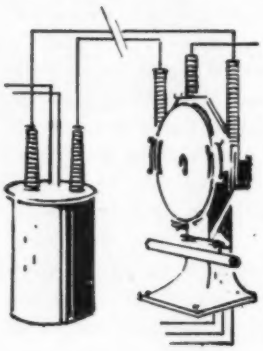
For example, the equipment for energizing Western Precipitation COTTRELLS include sueh features as the following...



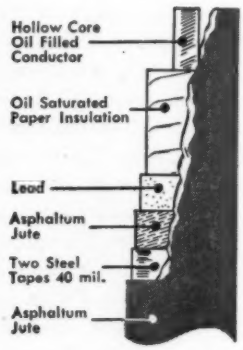
RECTIFIER SWITCHBOARDS—are of the Enclosed Cubicle type with flush-mounted meters, push buttons, selector switches, and indicating lights. The cabinet door and rectifier control circuit are interlocked. Rectifier and transformer contactors, instrument transformers, tap switches, terminal blocks and other auxiliaries are mounted inside the switchboard cabinet.



RAPPER AND POWER PANELS—are of the same external appearance as rectifier switchboards and can be installed beside rectifier switchboards to form a uniform and continuous switchboard installation. The cabinet is divided into two compartments—one containing AB breakers for control of all individual rectifier and signal circuits—the other containing all rapper controls and timers.



RECTIFIERS—for either full or half wave rectification. Mechanical rectifiers of the solid disc type are supplied with Radio Interference Correctors and Inductive Type Automatic Polarity devices. The Automatic polarity device has no commutator or brushes contacting high speed rotating parts. High voltage switch gear with interlocking control units is available.



HIGH VOLTAGE CONNECTIONS—between the rectifiers and the COTTRELL may be either special high voltage petrolatum-filled lead and steel-covered cable with pothead terminal connections, or of rod-and-bus-duct construction.

Watch for the next in this series which outlines the various* COTTRELL *electrode systems available from Western Precipitation Corporation.

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Western Precipitation can design COTTRELLS to operate at any desired efficiency, for *any* capacity, to collect virtually *any* solid or liquid suspended in a gas, whether hot or cold.

***Do you have these helpful* COTTRELL *booklets?* This literature answers many questions concerning COTTRELL equipment. Free copies will gladly be sent those interested. Ask for booklets C101 and C103.**

What Is Our Destination?

▸▸▸ WHILE AMERICAN paper manufacturers were in convention at the Waldorf-Astoria in New York, and while their technical men were studying new techniques at the Commodore, trying to ascertain "where do we go from here," British voters in a general election, gave a partial answer by curtailing the Parliamentary majority of the Labor party to an unworkable minimum.

Watch Effect of British Elections

American industry studied problems of labor, legislation, foreign trade, forestry, new uses for new papers, and potential new raw materials. The British electorate proclaimed violent opposition to the Socialistic program of the Labor party.

While this may seem to be a far cry from America's industrial problems, the effect of the British elections on American business will be profound, for it was a repudiation of British Statism which in may respects has been the model for a certain political group in Washington.

With Australia and New Zealand repudiating Labor Governments after years of Socialism, and Great Britain demonstrating a sharp turn to the right, preventing the carrying out of wide programs of nationalization of industry, there has been erected a stop sign to caution American politicians against efforts to duplicate Britain's failures here.

The paper industry's interest in "where do we go from here" was demonstrated by the fact that the executives and their technicians at the two parallel conventions were given the largest attendance in history.

News reports have given details of the various phases of the industry's problems as presented by an imposing array of outstanding speakers, not the least important being the open meeting on the American Paper and Pulp Association's closing day.

In a survey of the week, it may not be amiss to outline some of the highlights of the week.

3-Month Record Broken

In the economic field there were many and various portrayals of the industry's prospects for the next few months, if not longer. The industry has capacity to produce about 10 per cent more paper than presently required, based on presumptive increase in demand due to increasing population. Four and a half million tons of capacity have been added since 1946, and the fourth quarter of 1949 saw all production records for a three-month period broken—tonnage of paper and board was 5,711,000 tons. No drop in demand is expected for the first half of 1950, and perhaps not for the rest of the year.

In the technical field, many new procedures were outlined, with the development of plasticized papers attracting much popular attention. Potential use of northern hardwoods in the production of pulp was given national attention through press services.

Spotlight on Forestry

Forestry constantly figured in group discussions. The production of pulpwood, prospects for adequate pulp supplies through the availability of maintained forest reserves and methods of encouraging private forestry for the sale by small owners of pulpwood crops were climaxed at the closing annual meeting. Suffice it to say that once again it was demonstrated that the American paper industry is doing more to preserve the forests than any other agency, not for sentimental reasons, but as the admittedly selfish objective of assuring the mills of the raw material they need for perpetual operation of their plants.

The Administration's drive against many phases of industrial co-operation, which it considers restraint of trade, came in for its share of attention.

National attention was given to the address of the head of a paper mill union who castigated selfish unions which refuse to recognize that the prosperity of employers and the communities in which mills are located is a joint responsibility of labor. This speaker said the proper task of labor included fair negotiations with employers which would remove the fear of unions from executive minds.

Free Trade Moves Closer

Foreign trade problems came up repeatedly, with decisions by administrative agencies to continue the battle against attacks on the tariff laws which have been chiseled down to a point where the paper industry is only a small degree removed from absolute free trade. That the paper industry has been the principal sufferer through attempts to reduce tariff rates, and is the largest contributor to foreign dollar shortages was repeatedly accented. The effects of devaluation of foreign currencies were also repeatedly analyzed.

Rounding out the convention week, the above phases of the week's studies were summarized when the Association's president pointed out that in the fifty years just closed the per capita consumption of paper has increased six times, and with population growth total consumption is now twelve times what it was in 1900.

From these discussions it became apparent that the question, "where do we go from here" was answered by two words: *onward* and *upward*. Greater development, more intensive industrial processes, an increased appreciation of the paper industry's share in national prosperity, and a continuance of opportunity for advancement by those groups which use and do not abuse the opportunities in America for principal of reward for intelligent forward-looking enterprise are factors in the industry's future.

Convention Miscellany

How the greatest number may receive the greatest good continues to be a problem in the studies of disposal of waste material and correction of stream pollution. The still pending

question of what may happen to the Espanola mill in Canada by reason of the protests by a few fishing resort proprietors and legal procedures which might force the closing of a big paper mill has come up in another form at Rhinelander, where citizens have complained of odors coming from a paper mill. These problems are not adjusted overnight, but the Rhinelander Paper Company has called attention to the fact that while it is that city's major tax contributor, it has interests in Canada to which it can transfer its pulp producing activities. Rhinelander's employees, the city's prosperity, both might be impaired by a continuance of such attacks.

On the other hand it is interesting to note it is at Rhinelander that thousands of dollars have been expended in experiments on the production of commercial products from sulphite pulp mill by-products. In this enterprise processes are being carried out on a commercial scale for the reduction of stream pollution by growing Torula yeast in spent sulphite liquor. The use of this material in foods for poultry and domestic animals is being followed with experiments in its use for human diet. Instead of waiting to be attacked for stream pollution, the paper industry has gone far in constructive efforts to commercially utilize wastes, at the same time averting cause of complaint from anglers and other groups.

Capitol Notes

Washington developments continue to involve factors of importance to the paper industry. Congressman Celler's attack on what he calls price fixing of newsprint has been followed by a frank letter from the head of the Canadian paper industry offering all collaboration in any sincere effort to ascertain the facts.

The practice of Washington economists to study figures only is illustrated in a Federal Trade Commission survey of net earnings in the paper industry which attempts to prove that the larger companies are in the happiest financial position. This survey does not take into consideration that the difference between the large and small companies in profit percentages is largely due to the fact that the larger companies have their pulp and paper production facilities integrated, while the smaller companies are pulp buyers.

Mathias Niewenhous, before the war a general contractor, then deputy director of the Lumber Division in the War Production Board, and since then with other Washington agencies, including the Forest Products Branch of the ECA, has been appointed chief adviser on forest products to the National Security Resources Board.

Congress soon will take up the proposal to make the United States a member of the International Trade Organization, by approving the Havana Charter and the proposal will be opposed by many groups, including the National Association of Manufacturers and the Chamber of Commerce of the United States, both of which object to the regimentation of American industry which could be accomplished by an international organization in which this country has only one vote out of over fifty. The American Paper & Pulp Association may go on record against the Charter.

New Waterpower Projects Are Proposed

The division of the United States into nine areas, each with a Valley Authority like the Tennessee Valley Authority is viewed by domestic industry as tending toward a regimented control of all industries involving water users by nine groups of three men, twenty-seven in all, responsible only to the President.

The issue has been raised by the pending proposal to establish a Columbia Valley Authority which would cost three billion dollars for water projects alone. This project would control water used by paper mills in the entire Columbia Valley area, including the river's tributaries, and cover paper mills in Oregon and Washington. A similar project is proposed for California, others for the Missouri and Great Lakes areas, covering all mills in the Wisconsin, Michigan, Ohio, Minnesota and Northern New York regions.

An Atlantic Seaboard authority would include the Holyoke and Connecticut Valley area, as well as Maine and Eastern Massachusetts. This is only a partial outline of the major "authorities" which include principal paper mill areas. No part of the country is exempt. The immediate fight is over the Columbia Valley Authority, but bills are in Congress for all of the other areas.

Propose Injury Benefits for American Industry

The tide of public opinion on problems of foreign trade, the maintenance of the ECA, and the danger of injury to domestic industry through international commitments is definitely beginning to turn. Official recognition of possible dangers to domestic industry was given by ECA Administrator Hoffman before a Congressional Committee when he proposed that some steps be taken to establish an American Recovery Plan to compensate industries injured in the efforts to develop a flood of foreign imports, such as those which ruined the Waltham Watch Co. Not only does Mr. Hoffman propose indemnification for industry, but also some form of unemployment insurance payments to care for displaced American labor. He admitted that such proposals would have to be financed by domestic taxation.

Wage Spiral May Be Felt

The maintained efforts of the big union organizations to continue the upward spiral of wages may have its effect on the national economy because every such increase means higher living costs for the entire population, not merely for those who secure gains in income.

IMPORTS of newsprint from Canada have been barred for the first half of 1950 by the British Government. Canada being in the hard money field, this move was taken to conserve Canadian dollars, just as similar embargoes have been applied against American papers to conserve Britain's United States dollar balances. If the Canadian dollar balance improves, the restriction may be lifted for the last half of the year. The amount canceled is 100,000 tons.

Financial

▶▶▶ THERE HAS BEEN little fluctuation in paper mill securities during the past month. Even the serious coal strike did not serve to unduly disturb the stock market, but it did serve as a brake on possible further price advances. Income reports of the mills continue to indicate that while production is at a demonstrable peak, profits have dropped with increasing raw material and labor costs. The boom of 1947 could not be expected to continue forever.

American Writing Paper Corp.—Net income for the year ended Dec. 31 was $12,557 as against a deficit for 1948 of $49,692. For three months ended Dec. 31 net profit was $36,433 as against a profit of $51,690 for the same quarter of 1948.

Chesapeake Corp.—Net profit for the year ended Dec. 31 was $1,729,567 as compared with $3,036,944 for the previous year.

Paraffine Cos., Inc.—Net income for six months ended Dec. 31 was $61,844 as compared with $1,962,878 a year ago.

Puget Sound Pulp & Timber Co.—Net income for 1949 was $1,126,497 as compared with $5,513,626 in 1948.

S. D. Warren Co.—Net income for the year ended Dec. 31 was $1,516,881 as compared with $1,631,083 for the preceding year.

Soundview Pulp Co.—Net income for the year ended Dec. 31 was $610,227 as compared with $641,910 a year ago.

Sutherland Paper Co.—Net income for the year ended Dec. 31 was $1,613,629 as compared with $2,069,673 for the year previous.

Union Bag & Paper Corp.—Net income for the year ended Dec. 31 was $7,486,638 as against $13,607,690 a year ago.

United Wall Paper, Inc.—Net loss for six months ended Dec. 31 was $464,819 as against a profit for the comparable period a year ago of $245,374.

U. S. Envelope Co.—Net profit for the year ended Dec. 31 was $874,751 as compared with $758,026 a year ago.

U. S. Gypsum Co.—Net profit for the year ended Dec. 31 was $22,165,608 as compared with $24,596,688 the previous year.

Waterville Paper Co.—Net income for the year ended Dec. 31 was $444,375 as compared with $510,150 a year ago.

West Virginia Pulp & Paper Co.—Net profit for three months ended Jan. 31 was $1,963,400 as compared with $2,626,452 for the same fiscal quarter a year ago.

Paper Mill Corporate Changes

Twin Falls Paper Co.—What appears to be the final chapter in the legal battle over the old Frontenac Paper Corp., has been written with the ownership of the property going to a newly organized corporation, the Twin Falls Paper Co., capitalized at $15,000. The old company was sold to a real estate broker to satisfy a mortgage foreclosure, and the broker turned the property over to Dexter Sulphite Pulp & Paper Co., to meet that company's liens.

New York Stock Exchange—Stocks

	Closing Prices Feb. 25, 1950	Jan. 25, 1950
A.P.W. Products	3¼	3¾
Celotex	19⅜	19⅜
Same Preferred	17⅛	*17-17½
Certain-teed Products	17⅜	16⅜
Champion P & F Co.	33⅜	33⅝
Same Preferred	101½	*99-100
Chesapeake Corp.	25½	*25-25⅝
Container Corp.	42¾	40⅜
Same Preferred	105	*102½-104
Continental Diamond	9	8½
Crown Zellerbach	33⅜	30⅝
Same Preferred	104⅝	102½
Same $4 Preferred	*103-104½	*100½-103
Dixie Vortex	37½	*36-37
Same "A"	52½	*52¾-54
Eastern Corp.	15	14½
Robert Gair	7⅜	7⅝
Same Preferred	18	18
Gaylord Container	19⅜	19¼
International Paper	36½	34⅝
Same Preferred	104	*103-104½
Kimberly-Clark	38⅞	24⅜
Same Preferred	115½	109¼
McAndrews & Forbes	41	*40-40½
Marathon	28¼	26⅛
Masonite	59⅜	59
Mead Corp.	17⅛	16⅜
Same Preferred	89	*89-91
Same 2nd Preferred	35¼	*34-35
National Container	7⅝	8¼
Paraffine Cos.	15⅜	19⅜
Same Preferred	104	*100-102½
Rayonier, Inc.	27⅝	24½
Same Preferred	31¼	31
Scott Paper	69¼	68½
Same $3.40 Preferred	94⅝	*94⅝
Same $4 Preferred	105¼	*106-107
St. Regis	7⅞	8¼
Same Preferred	88	*86-87
Sutherland Paper	40	39½
Same Preferred	109¾	107¼
Union Bag & Paper	28⅜	27⅜
United Board & Carton	8⅜	8⅞
United Wall Paper	3⅜	2⅝
Same Preferred	*25½-27	*26-28
U. S. Gypsum	118	111½
Same Preferred	188	*184¾-186
West Va. P & P Co.	48½	46
Same Preferred	110	*108-109

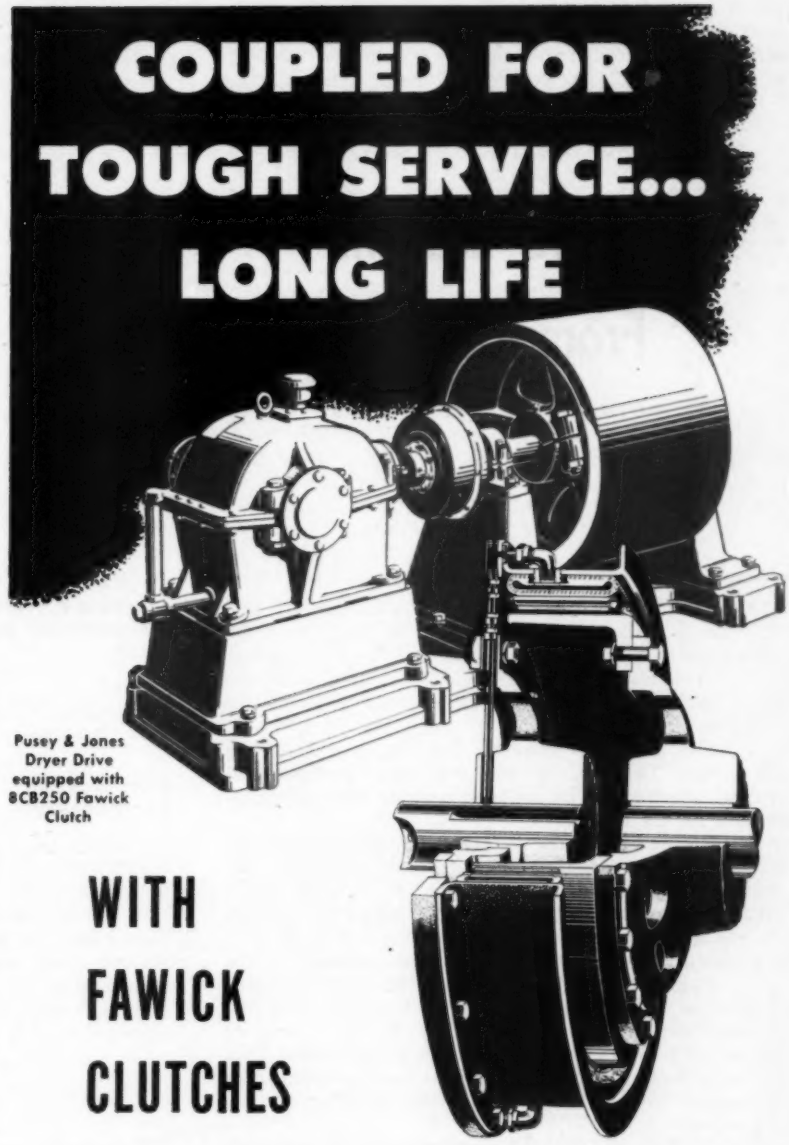
New York Stock Exchange—Bonds

A.P.W. Products 3%	*81-82	82
Celotex 3½%	*91	----
Champion P & F Co. 3%	*98	102⅜
Mead Corp. 3%	102¼	*103

New York Curb Exchange—Stocks

Am Writing	6⅜	*6¼-6½
Great Northern	43⅜	41

*Closing Bid and Asked Prices



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Some Lessons From the 1949 Recession

DR. LOUIS T. STEVENSON, Economist
American Paper and Pulp Association

▶▶▶ SOME REAL LESSONS for us in the paper industry* and for all manufacturing industries may lie in the accompanying charts showing paper and pulp production and price levels. The whole economy is supplied by the paper industry, which is to a large extent a service industry to other industries.

A major change in economic behavior is indicated in these charts. This behavior will be examined and analyzed, and an attempt will be made to indicate the underlying reasons for the change.

Briefly stated, we in the paper industry have experienced a postwar major cyclical decline and recovery in production without a collapse in the price level. In the past such a cyclical decline has always been accompanied by a major decline in the price level. That this was not peculiar to the paper industry but was general, is indicated by the drop in the Federal Reserve Board Index of Industrial Production from a peak of 195 in both October and November 1948 to a low of 161 in July of 1949, a drop of 17 per cent. At the same time the All Commodity Price Index of the Bureau of Labor Statistics dropped from 165.4 in October 1948 to 153.5 in July 1949, a decline of only 7 per cent.

On Chart I are plotted paper and paperboard production and wood pulp production in the United States for the two war and postwar periods. The two armistice years, 1918 and 1945, are synchronized on the chart. Each postwar period is characterized by a sharp recession in the volume of production. Percentagewise the drop in production was 40 per cent after the first World War and 31 per cent after the second World War. But the most important difference between the production curves is the timing of the postwar recessions.

Timing of Paper Industry Recessions

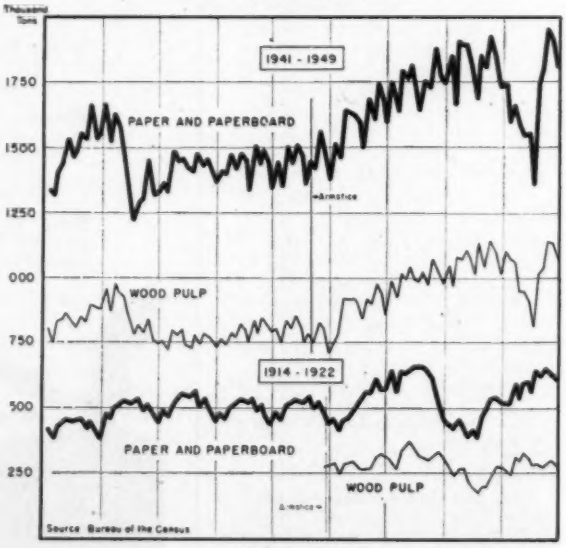
The drop in production after the second World War came over a year later than the drop after the first World War, when each is related to its armistice day. Also, the first World War drop took four months more than the recession after the second World War to reach bottom. The first slide down from the post-War I peak lasted just about as long as the slide after War II, and the percentage decrease of the two drops to this point was almost equal. But the post-War I curve continued downward at a slower pace for another four months.

Time Needed For Recovery

Another and important difference between the two periods was the time it took to recover the lost ground from the depth of the depression. In the post-War I period it took twelve months, while last year production practically leaped from the low point to a new high in three months. Adding these periods of recession and recovery together we find that after War I it took *two years* to complete the cycle of production from peak through low and then through recovery to full production again. In the post-War II

Chart I

PRODUCTION OF WOOD PULP AND PAPER AND PAPERBOARD DURING TWO WAR PERIODS



YEARS BY MONTHS

*The term "paper industry" is here used in the broad sense to include board as well as paper.

period it took *only eleven months* or less than half the time it took to recover from the War I recession. A close examination of the 1948-1949 period on the production chart will show that by the end of 1948 production had suffered but a normal seasonal decline, and was just about at the level of December 1947, which at that time was a record production for the month. Consequently it may be said with justice that the 1949 drop took only six months, from January to July, and that the cycle was completed between January and August, a period of only seven months instead of the eleven which we have used above. Any way that it is taken, the 1949 cycle was extremely short.

Why was the 1949 cycle so short as compared with the 1920-1922 cycle?

A great many factors have entered into the difference in behavior in these two postwar periods. In a system of free competitive enterprise most of these factors are synthesized in the price level.

No accurate index of paper prices is available for the post-War I period. The writer, who was in charge of operating a paper mill during the period, recalls that paper prices broke sharply about September 1920 and reached a low the following spring. A specific grade dropped from 22c to 9c a pound during that period.

Chart II shows the index of paper prices of the American Paper and Pulp Association, and the All Commodity Price Index of the Bureau of Labor Statistics for the period from January 1941 to December 1949 inclusive. It is believed that the close correlation shown between the indexes in this period also prevailed during the 1914-1922 period. Accordingly, the analysis of paper price movements will rely upon this correlation with the B.L.S. All Commodity index in dealing with the post-War I period. A glance at Chart III which shows the B.L.S. All Commodity Price Index will show the marked contrast in the behavior of prices between the two periods under discussion.

The general level of prices for the two periods as shown by this chart indicate that the post-War I peak was reached two years after the armistice, whereas the 1948 peak was three years after V-J Day.

The drop from the peak of 1920 was precipitate, and the bottom was a catastrophic 55 per cent below the peak. Contrast with this the decline from the 1948 peak to an index point in December 1949 of only 11 per cent below the peak level of 1948!

Returning to Chart II it will be observed that the paper price level did not reach the peak attained in 1948 by the All Commodity Price Index. The paper level of January 1948 held uncertainly until March of 1949, when it dropped sharply to July. This sharp drop coincides in timing with the 1949 sharp drop in production which has already been noted.

Here we had an incipient 1920-1921 depression in the making, for dropping production was accompanied by a declining price level.

It is easy to see that something different intervened in 1949, and *that something* was the maintenance of personal expenditure of consumers at the same level in 1949 as in 1948. The great consuming public had money, and was willing to spend it!** Spending continued even though production slowed down, and with it the income of many individuals. A vast volume of individual liquid savings was probably the basis for this confident buying on the part of the public.

A contributing factor was the conservative inventory position, generally taken by business men, so that heavy unliquidated inventories did not stand over the market as a depressing influence. When production dropped off with the drop in orders such over-supplies as were in inventories along the lines of distribution were soon exhausted, and by July the buyers were again in the market. The recession of 1949 may be said to have been a period of inventory adjustment accompanied by moderate price declines in the face of a high volume of consumer buying.

The lesson to be learned from this is that there was plenty of buying power in the hands of consumers who had not lost confidence in the price level. If business inventories are maintained on a conservative level, a decline in production need not be disastrous where these conditions are present.

**See Postwar Conditions, World Wars I and II, by the author in *The Paper Industry and Paper World* for April 1948.

Chart II

WHOLESALE PRICES OF ALL COMMODITIES AND WEIGHTED AVERAGE PRICE OF PAPER AND PAPERBOARD

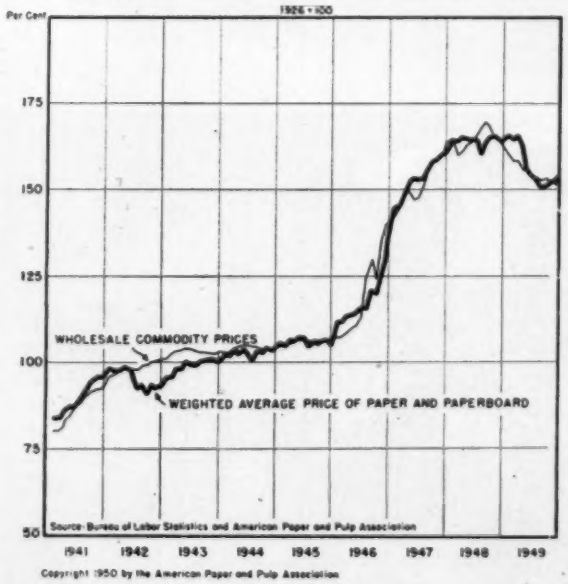


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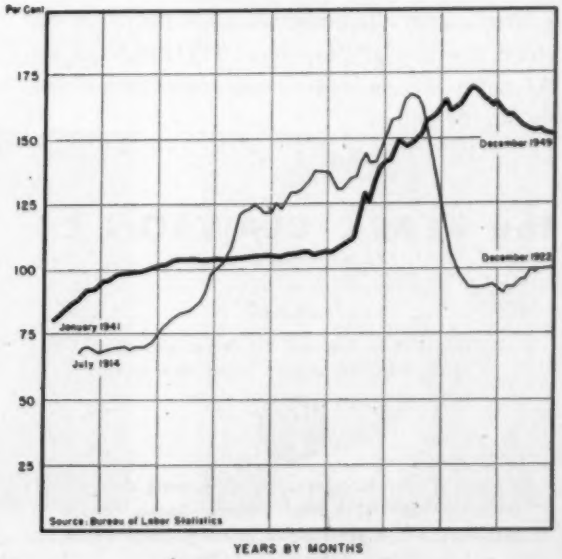
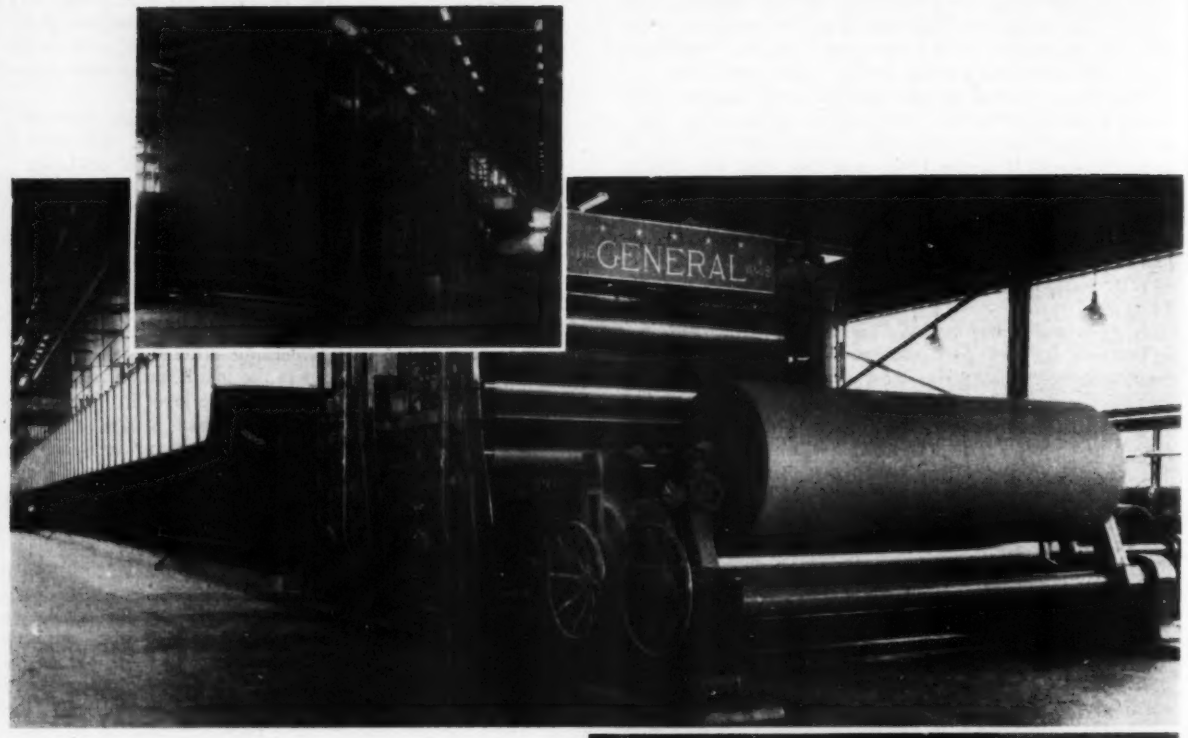
Chart III

WHOLESALE PRICES OF ALL COMMODITIES DURING TWO WAR PERIODS



YEARS BY MONTHS



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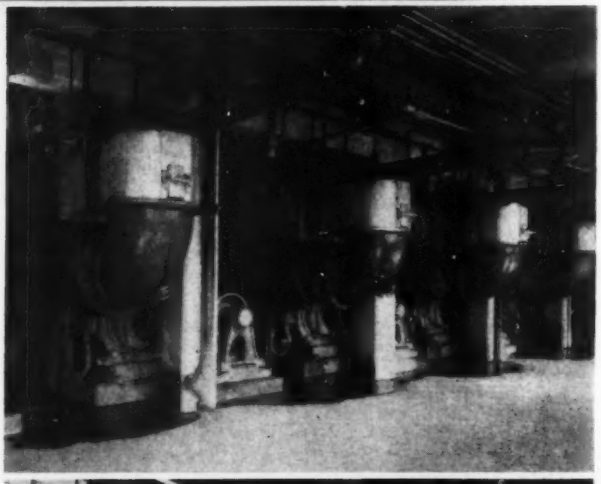

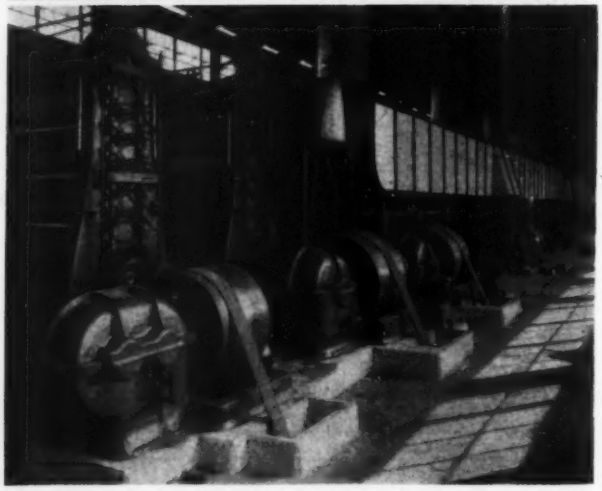

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"Paper Week" Record Attendance Marks 73rd APPA Convention

▶▶▶ THE PAPER INDUSTRY had been suffering from a postwar boom when the organization now known as the American Paper and Pulp Association was formed. There was need for stabilization as the industry had been suffering from overproduction and price cutting following the Civil War.

One hundred mills were represented at the organization meeting when the Association was formed, and first named American Paper Makers Association. At the sixth annual meeting, the name was changed to American Paper Manufacturers' Association. The present name was adopted a few years later. At that time, the capitalization of the industry was estimated at $35,000,000 with 17,910 persons employed.

When the seventy-third annual convention of the APPA was held at the Waldorf-Astoria Hotel in New York City, February 18-24, it was the consensus that the attendance was the largest of any yearly get-together in the lengthy history of the paper and pulp industry. Separate meetings are held by each of the large and increasing number of APPA Divisional Bodies.

New Officers

At the annual meeting of the Executive Committee and Board of Governors of the Association, held in the Jansen Suite of the hotel on February 23, George Olmsted, Jr., president of the S. D. Warren Co., Boston, was elected APPA president for the ensuing year, succeeding Cola G. Parker, president of the Kimberly-Clark Corp., Neenah, Wis., who had served as chief executive of the Association for the past two years.

Sydney Ferguson, chairman of the board of The Mead Corp., New York City, was elected first vice president, and the following vice presidents were chosen: M. D. Bardeen, president of Lee Paper So., Vicksburg, Mich.; Alexander Calder, president of the Union Bag & Paper Corp., New York City; Hugh J. Chisholm, president of the Oxford Paper Co., New York City; R. K. Ferguson, president and chairman of the St. Regis Paper Co., New York City; R. L. Fitts, president of the Southern Advance Bag & Paper Co., Boston; John H. Hinman, president of the International Paper Co., New York City; D. S. Leslie, first vice president of Hammermill Paper Co., Erie, Pa.; David L. Luke, Jr., president of the West Virginia Pulp & Paper Co., New York City; R. A. McDonald, executive vice president of the Crown Zellerbach Corp., San Francisco; J. L. Madden, president of Hollingsworth & Whitney Co., Boston; Vertrees Young, executive vice president of Gaylord Container Corp., Bogalusa, La., and George E. Williamson, president of the Strathmore Paper Co., West Springfield, Mass.

Earl W. Tinker was again elected executive secretary-treasurer.

Annual Dinner Meeting

The annual dinner of the APPA held in the Grand Ballroom of the Waldorf-Astoria the evening of the 23rd, proved a fitting climax for the very interesting convention. On the dais, at two long tables, were approximately two score leaders of the industry, including past presidents, governors and executive committeemen of the Association, and other officials and invited guests.

Retiring president, Cola G. Parker, gave his annual report at the dinner. Also introduced was Robert M. Fowler, president of the Canadian Pulp and Paper Association, who brought greetings from our industry neighbors in the Dominion.

Another feature was the guest speaker, C. D. Jackson, publisher of *Fortune* magazine, whose topic was "The Decade of Decision." Mr. Jackson painted an impressive word picture of world conditions today and emphasized the important role that must be played by business men in America in making political and economic decisions that will determine the world's destiny during the present dangerous era.

President Parker's Report Optimistic

In his annual report to the Association, President Parker said that in terms of figures, total production for the year had dropped less than 8 per cent from record level of 1948. He explained that with such sharp variations as did occur, it was but natural to expect some price weakness during the period of low orders and low production. It was likewise logical to expect a stabilization and a generally steady level of prices when orders and production recovered, and it became apparent than any excessive inventories had been generally liquidated.

Highlighting the President's address were such salient points as: "In the national economy, there appear to be counterbalancing threats . . . it is clear that the deficit position of the Federal Government finance picture is, in effect, inflationary. . . . Among de-

George Olmsted, Jr., new president of the American Paper and Pulp Association

Cola G. Parker, retiring president of the American Paper and Pulp Association

E. W. Tinker was re-elected executive secretary of the American Paper and Pulp Ass'n

flationary influences, particulary for our industry, are the general currency depreciation of last September, the further reduction of tariff rates as a result of the Anency agreements, and further threats in the same field arising from the announced intention to initiate further negotiations this year.

"Yet . . . it is safe to say that as far as the immediate or short-term future is concerned, the situation is healthier than that of a year ago. . . . I believe that our industry may really be reasonably optimistic as to the year ahead.

"Two factors are always recognized as of major import—per capita consumption and population growth. In the fifty years now ended, per capita consumption of paper and board increased approximately six times, and when this type of growth was multiplied by the steady increase in population, the result was a twelve-fold increase in aggregate consumption in the same period of time.

". . . There is still a third influence—the effect of which is quite intangible, but which I feel sure adds weight to the secular trend of our industry. That influence is the civilizing influence of paper itself. We all recognize the fact that as civilization and literacy advance, the demand for paper increases. . . . and there is always before us the prospect of further substitutions of paper and board in its various forms for other less economical products."

"With these growth factors operating, it should be clear that nothing short of a national setback of catastrophic proportions can prevent continuing demand and eventual further growth."

The subjects of foreign trade conditions, forest resources, pulp imports, and miscellaneous Association activities were well covered by Mr. Parker.

Open Meeting

At the general industry open meeting of the APPA in the Starlight Roof of the Waldorf-Astoria Thursday afternoon, with D. K. Brown, president of the Neenah Paper Co., Neenah, Wis., and a past president of the APPA, presiding, four major subjects were discussed by prominent speakers. Vertrees Young, executive vice president of the Gaylord Container Corp., spoke on "Forestry and the Paper Industry" and told a graphic story of the part played by the pulp and paper industry in the conservation of our natural resources, more particularly our forest resources.

William Beckett, executive vice president of the Beckett Paper Co. and president of the Association of Pulp Consumers, Inc., spoke on "Effects of Devaluation and Tariff Reductions on the Paper Industry." Malcolm Whyte, senior member of the law firm of Whyte, Hirschboeck and Minahan, of Milwaukee, Wis., and for many years counsel for the National Paperboard Association, talked on "Legislation,," and John Burke, president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, discussed "Labor's Interest in the Paper Industry."

Royal S. Kellogg

Vernon L. Tipka

R. S. Kellogg Retires

Royal S. Kellogg, dean of the secretaries of the associations in the paper industry, and perhaps the senior trade association executive in the United States, resigned as secretary-treasurer of the Newsprint Service Bureau, on February 22, effective March 31, rounding out exactly forty years of a trade association career. Vernon L. Tipka was elected secretary-treasurer after a year of service as engineer for the Bureau, and John J. Zima was elected assistant secretary.

An outstanding trade association executive, Mr. Kellogg has been first, last and all the time a forester, and was a key figure in the movement in the early 20's, which made forest utilization and protection a major objective of the entire domestic paper industry. He was elected a member of the Society of American Foresters in 1905 and a Fellow of that professional organization last year.

Mr. Kellogg, a native of New York State, was a graduate of Kansas State College in the class of 1896, and went into the United States Forest Service in 1901, where together with long service in the field he set up the procedure for the collection of statistics of forest products which is still being followed. On March 31, 1910, he left the Forest Service to become the first secretary of the Northern Hemlock & Hardwood Association with headquarters at Wausau, Wis. After five years with that Association, he went to the National Lumber Manufacturers Association in Chicago, and in 1918 became secretary of the Newsprint Service Bureau, which was then being formed in New York. His resignation, taking effect March 31 of this year, gives him forty years of association service to the day.

Mr. Kellogg's part in the forestry program of the paper industry began in 1920 when George W. Sisson, Jr., then president and now the oldest living past president of the American Paper and Pulp Association, with Mr. Kellogg as a consultant, secured an outstanding forester, Dr. Hugh P. Baker, Dean of the New York State College of Forestry as Secretary of the American Paper and Pulp Association. Dr. Baker secured other foresters as his assistants and the American Paper and Pulp Association was a principal sponsor of the National Forestry Program Committee which, under the chairmanship of Mr. Kellogg, secured the passage of the Clarke-McNary bill by Congress. This key measure has since then been the basis under which cooperation between the Federal Government and the States and private owners has been intensively developed with a view to so preserving the nation's forests that they will be a perpetual source of supply for the wood using industries.

Among his other publications Mr. Kellogg is the author of *Lumber and Its Uses,* still a text book in the nation's forestry schools, *Pulpwood and Wood Pulp in North America* and *Newsprint Paper in North America.* He has visited every newsprint mill in North America and many mills in other parts of the world.

With forestry and industrial statistics of the highest order as his chief aim in life, Mr. Kellogg has also devoted considerable time to deep water sailing, taking a course in navigation when he was 56 years of age, and has sailed his own vessel from New York to Florida and Cuba. He was Commodore of the Harlem Yacht Club at City Island, N.Y., during his playtime.

Mr. Kellogg has built a home near Bradenton, Fla., and is showing continued interest in forestry by starting a movement for fire control in that section through the formation of forestry committees in the Bradenton Chamber of Commerce and the Palmetto Rotary Club.

Mr. Kellogg will retain his connection with the Newsprint Service Bureau by service as consultant when his experience is in demand.

New York TAPPI Meeting

▸▸▸ THE THIRTY-FIFTH annual meeting of the Technical Association of the Pulp and Paper Industry was held at the Commodore Hotel in New York, February 20-23, 1950. Over 1500 persons registered their attendance to make this one of the largest and most successful conventions in TAPPI history.

As usual, the technical sessions comprising some eighty papers constituted the most significant part of the program. One of the more important events, however, was the presentation of the TAPPI Medal to George H. Mead for outstanding service to the paper industry. The medal was presented at the annual luncheon by Reuben B. Robertson of The Champion Paper & Fibre Co.

At the opening session on February 20 it was announced that A. E. Bachmann, Missisquoi Corp., had been re-elected president of TAPPI for 1950-51, and that Kenneth Geohegan, Howard Paper Mills, would remain as first vice president. Members of the executive committee elected for three year terms are: K. O. Elderkin, Crossett Paper Mills, Crossett, Ark.; Milton Jacobs, Charles T. Main, Inc., Boston, Mass.; George E. Shipman, Donnacona Paper Mills Ltd., Donnacona, Que.; and Ralph W. Kumler, American Cyanamid Co., New York. Richard P. Price, Hammermill Paper Co., Erie, Pa., was elected for a one year term.

Albert E. Bachmann was re-elected by TAPPI as its president for the coming year

R. G. Macdonald was again made secretary-treasurer of the Technical Association

Presidential Address

In his address, President Bachmann reviewed the past year's activities of the association and outlined future plans. "One of the prime objectives of TAPPI for the future is to organize various parts of the existing literature and data sheets into more readily accessible forms for reference purposes. Provision is already being made for a considerable expansion of the data sheet activities by various committees.

"During the year also we have proposed the idea and delineated in detail a technique for expanding the organization of the Paper Manufacturing Committees in order to get down to smaller groups possessing common problems. It is hoped that such groups will be able to make a more concerted attack on the various parts of the subject of paper making principles and over a period of years start us on the road to producing a science of paper technology. To this end we expect to produce shortly an illustrative example of the results of such a technique.

"We expect to start this year to organize a Cost Engineering Committee to work out standard definitions and methods of calculation for various operating efficiency ratios and to attempt in some fields, where sufficient interest exists, to get inter-mill comparisons for purposes of establishment of better operating standards together with examination of methods for producing them.

"To properly serve such a large and constantly growing membership it is essential that TAPPI continue not only to progress along established lines of endeavor but also that it expand and diversify its activities to produce meetings and material for a wider range of interests. Your executive committee, technical committee members and local section committees have constantly attempted to initiate new projects and give them initial impetus in an effort to meet this need. These committee members are busy people who give freely of their time and research knowledge to improve the status of TAPPI in the interests of the membership and their companies.

"In order to maintain the continual progress of TAPPI it is also vitally necessary that a greater proportion of the TAPPI membership individually take part in its programs and activities. Membership in TAPPI implies a responsibility on the part of its entire membership to take an active part in some phase of its activities so that all can benefit from the work and experience of each other."

Report of the Secretary

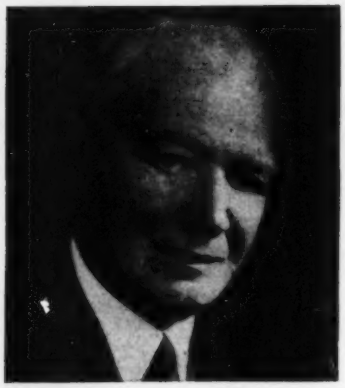
R. G. Macdonald, secretary-treasurer of TAPPI, in his annual report summarized some of the accomplishments of the past year. He pointed out that the total individual membership in the Association has grown to 4015. One of the important developments of the year was the establishment of a TAPPI Fibrary. According to Mr. Macdonald, "a questionnaire was sent to the Association membership requesting samples of papermaking fibers. The response to this request was excellent with several hundred samples being offered. The returned questionnaires are being studied by the Institute of Paper Chemistry staff to determine which samples will be accepted for the Fibrary which will be located at the Institute. The purpose of the Fibrary is to be the source which may be called upon by individuals or companies to supply them with fiber samples of known origin and history. These can be studied miscroscopically as a basis for determining the nature of undertermined fibers. This service was requested by the TAPPI Testing Conference held at the Mellen Institute, Pittsburgh, in October, 1948.

"During the past year no new local sections were established but last fall a group known as the Lake Erie Papermaker's and Converter's Association was established in Cleveland, Ohio and is serving a large area from Erie, Pa., to Monroe, Mich., and south to central Ohio."

During the convention, individual luncheon meetings were held by the New York State College of Forestry, University of Maine, and Massachusetts Institute of Technology. The University of Maine luncheon was significant because of the announcement of a new pulp and paper foundation being established at this school. (A more detailed account is given in succeeding pages.)

Quite in keeping with past annual meetings, an outstanding speaker gave the address at the annual luncheon.

George Mead Awarded TAPPI Medal



THE EIGHTEENTH TAPPI Medal was awarded to George Mead, chairman of the board of The Mead Corporation, Chillicothe, Ohio, at the Technical Association's luncheon, February 23, in the Grand Ballroom of the Commodore Hotel.

This honor was conferered upon Mr. Mead for his long and valued service to the paper industry and particularly for his support of the activities of and his contributions to the progress of TAPPI.

Mr. Mead is a past president of the American Paper and Pulp Association, and he served in numerous capacities for the Government during the war years.

Presentation of the medal was made by R. B. Robertson, chairman of the board of The Champion Paper and Fibre Co., Hamilton, Ohio. Mr. Robertson also is a past president of the APPA.

Joseph E. Atchison, chief of the Pulp and Paper Section, Industry Division, ECA, outlined the accomplishments of the Marshall Plan with respect to the pulp and paper industry in Europe. Dr. Atchison made an extensive tour of Europe (cf. THE PAPER INDUSTRY, January, 1950, page 1202) in connection with his work with ECA and was able to give firsthand information regarding the pulp and paper industry in Europe.

Technical Program

General Session

A. E. Bachmann, President of TAPPI; Missisquoi Corp., Sheldore Springs, Vt., presiding.

The Use of Radioisotopes for Process Control in Pulp and Paper Manufacturing, by A. P. Schreiber, Tracerlab, Inc., Boston, Mass.

Wax Testing

A. M. Heald, Marathon Corp., Menasha, Wis., presiding.

Report of TAPPI-ASTM Committee on Petroleum Wax, by A. P. Anderson, Shell Oil Co., New York, N. Y.

Review of Work on Petroleum Wax by ASTM, by J. B. Rather, Jr.

Review of Work by TAPPI Wax Testing Committee.

(a) *Melting Point Distribution,* by F. H. MacLaren.

(b) *Blocking Point,* by M. W. Kane.

(c) *Seal Strength,* by G. C. Borden, Jr.

(d) *Tensile Strength,* by J. W. Padgett.

Modulus of Rupture Test for Paraffin Wax, by L. E. Hoag, American Can Co., Maywood, Ill.

Determination of Sealing Strength of Paraffin Wax, by E. W. Gardner, California Research Corp., San Francisco, Calif.

Evaluation of Quality of Paraffin Wax, by F. H. MacLaren, Standard Oil Co. of Indiana, Chicago, Ill.

Papermaking—Cylinder Machine

J. J. Harrison, Michigan Carton Co., Battle Creek, Mich., presiding, and John T. Moss, Pusey & Jones Corp., Wilmington, Del., Recorder.

The Dominion Engineering Vacuum Vat, by C. S. V. Hawkings, Price Brothers & Co., Ltd., Jonquiere, Que.

A Rapid Instrument for Fractionating Pulp, by Arthur E. Reed, Gaylord Container Corp., Bagalusa, La., and James d'A. Clark, consulting engineer, Longview, Wash.

Development of the Cowles Side Drive Pulper, by J. M. Kelly, Kelly-Forsyth Corp., Ithaca, N. Y., and Edwin Cowles, The Cowles Co., Cayuga, N. Y.

Application of the Duotrol to Jordans and Refiners, by T. Agronin, Shartle Bros. Machine Co., Middletown, Ohio.

The Vortraps—As Applied to the Paperboard Industry, by H. E. Ingalls, Nichols Engineering and Research Corp., New York, N. Y.

Fibrous Agricultural Residues

S. I. Aronovsky, Northern Regional Research Laboratory, Peoria, Ill., presiding.

Developments in Methods of Treating Strawboard Wastes, by Don E. Bloodgood, Purdue University, Lafayette, Ind.

Improved Straw Pulp for Corrugating Paper, by H. M. Sutcliffe and S. I. Aronovsky, Northern Regional Research Laboratory, Peoria, Ill., R. M. Wilkinson and W. D. Burnham, Central Fibre Products Co., Quincy, Ill., and W. A. Phillips and E. R. Carpenter, Terre Haute Paper Co., Terre Haute, Ind.

Processes Being Used in Europe for the Manufacture of Straw Pulp, by Joseph E. Atchison, Economic Cooperation Administration, Washington, D. C.

A Laboratory Corrugator for 9-Point Medium, by Norval F. Wilson, Alton Box Board Co., Alton, Ill.

Wet Strength

K. W. Britt, Scott Paper Co., Chester, Pa., presiding.

Mechanism of the Retention of Beater Added Urea Resins, by Manuel N. Fineman and I. J. Gruntfest, Rohm & Haas Co., Philadelphia, Pa.

Neoprene Latex in the Paper Industry, by R. H. Walsh, H. H. Abernathy, W. W. Pockman, J. R. Galloway, and E. P. Hartsfield, E. I. duPont de Nemours & Co., Inc., Wilmington, Del.

Permanence of Wet-Strength Paper, by C. S. Marxwell and W. F. Reynolds, American Cyanamid Co., Stamford, Conn.

The Instron Tensile Tester, by George S. Burr and Harold Hindman, Instron Engineering Corp., Quincy, Mass.

The Softening Mechanism of Paper Plasticizers, by P. E. Nethercut, Watervliet Paper Co., Watervliet, Mich.

Chemical Engineering

J. R. Lientz, Union Bag & Paper Corp., Savannah, Ga., presiding.

The Role of the Chemical Engineer in the Pulp and Paper Industry, by G. W. E. Nicholson, Union Bag & Paper Corp., New York, N. Y.

Chemical Engineering Unit Operations in the Pulp and Paper Industry, by W. L. Badger, Consulting Engineer, Ann Arbor, Mich.

Stainless Clad Steel for Digesters, by W. H. Funk and E. H. Wyche, Lukens Steel Co., Coatesville, Pa.

Corrosion in Sulphate Pulp Digesters, by T. C. Johnson, Union Bag & Paper Corp., Savannah, Ga.

The Stacomizer — A Continuous Roller Press, by R. J. Chambers, Anglo-Canadian Pulp and Paper Mills Ltd., Quebec, Que., and K. C. Logan, Northeastern Paper Products, Ltd., Quebec, Que.

Water

C. M. Connor, W. C. Hamilton & Sons, Miquon, Pa., presiding.

Industry's Stake in the Ohio River Pollution Abatement Program, by Edward J. Cleary, Ohio River Valley Sanitation Commission.

Physical Factors Involved in the Clarification of Paper Mill Effluents, by Harry Gehm, National Council for Stream Improvement, New York, N. Y.

The Operation and Application of The Waco Filter, by Joseph K. Perkins, Improved Paper Machinery Co., Nashua, N. H.

The Operation of the Cyclator in White Water Recovery, by F. A. Eidsness, Infilco, Inc., Chicago, Ill.

Economic Considerations in White Water Treatment, by V. J. Calise, Graver Water Conditioning Co., New York, N. Y.

Control of Sewer Losses, by John G. Dobson, The Foxboro Co., Foxboro, Mass.

Some Factors Affecting Slime Formation and Freeness of Board Mill Stock, by Willem Rudolfs and Nelson L. Nemerow, Rutgers University, New Brunswick, N. J.

Plastics

E. C. Jahn, New York State College of Forestry, Syracuse, N.Y. and C. J. Straka, Westinghouse Electric Corp., Trafford, Pa., presiding.

The Effect of Paper Type and Structure on the Physical Properties of Phenolic Resin Bonded Laminates, by M. P. Seidel, Westinghouse Electric Corp., Trafford, Pa.

The Effects of Paper Type and Structure on the Moisture Dimensional Stability of Phenolic Resin Bonded Laminates, by M. P. Seidel.

The Beater Addition Process for Producing Laminating Papers, by Francis H. Snyder, L. Spiwak, and Alfred E. Moyer, Snyder Chemical Corp., Bethel, Conn.

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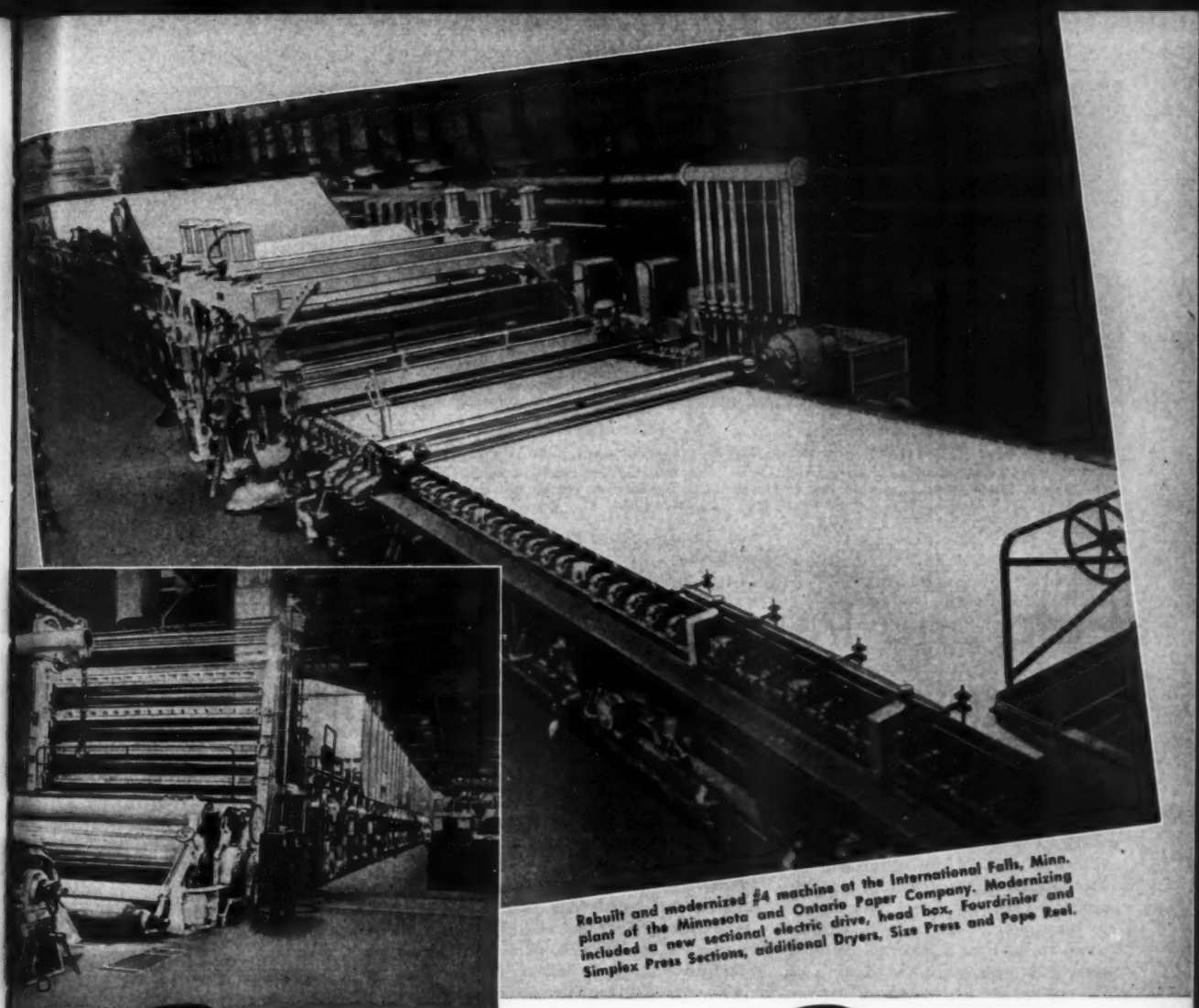


Rebuilt and modernized #4 machine at the International Falls, Minn. plant of the Minnesota and Ontario Paper Company. Modernizing included a new sectional electric drive, head box, Fourdrinier and Simplex Press Sections, additional Dryers, Size Press and Pope Reel.

Progress and Profits

are Built on Modernization

Puseyjones engineers have assisted in the rebuilding and renovation of paper making machines in many leading mills across the country—stepping up speeds, improving qualities, increasing profits. An outstanding job of modernization carried out by Puseyjones is the rebuilt and modernized machine of the Minnesota and Ontario Paper Company shown above. This 184 inch machine was originally installed in 1910.

A machine modernization program may call for the addition of a new appliance, the replacement of an obsolete drive, or may involve the complete rebuilding of the machine itself.

When maintenance costs become excessive or when a greater range of higher grade paper products is required, get the benefits of Puseyjones experience. Talk over your machine rebuilding problems with Puseyjones engineers. Write us today.

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-Making Machinery

Wilmington 99, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPER QUALITY

University of Maine Luncheon . . .

Seated at the head table were (L. to R.): Henry Booth, chemical engineer, Robert Gair Co.; Tom Mangan, manager, International Paper Co.; Cliff Patch, manager, Eastern Corp.; John B. Calkin, and Lyle C. Jenness, both University of Maine; J. L. Ober, vice president Scott Paper Co.; Ralph N. Prince, tech. service, American Cyanamid Co.; Arthur A. Hauck, president, University of Maine; Everett P. Ingalls, mill manager, S. D. Warren Co.; Philip S. Bolton, Robert Gair Co.; Ralph A. Wilkins, Bird & Son; and Ted Prescott, asst. adv. mgr., Scott Paper Co.

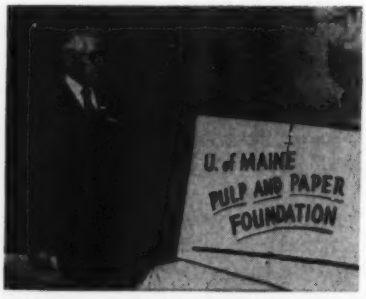
Pulp and Paper Foundation Approved by University of Maine

▶▶▶ THE ACTIVITIES of the pulp and paper program at the University of Maine will be augmented by a Pulp and Paper Foundation which has been approved by the University's trustees and endorsed by many members of the pulp and paper industry, its affiliates, and suppliers.

This new Foundation, which was announced at a luncheon meeting of Maine Pulp and Paper Alumni at the Roosevelt Hotel in New York City on February 22, will foster the following six-point program:

1. To interest more students who major in chemical engineering or chemistry to select the pulp and paper program.
2. To provide financial assistance in the form of loans and scholarships for students who plan to make pulp and paper their life work.
3. To offer a curriculum which will attract students and men from industry who will become leaders in the operating end of the pulp and paper industry.
4. To screen outstanding students with all-around ability, who have completed three or four years of basic college training, for a five-year course stressing operational management. These men would be eligible for scholarships or loans provided by the Foundation.
5. To augment the staff with personnel experienced in production management.
6. To advance fundamental and applied research for the pulp and paper and allied industries.

Dr. Arthur A. Hauck, president of the University of Maine, gave a brief account of the history of the pulp and paper courses at Maine and told of the benefits which will result from the establishment of the Foundation. He stressed the important part which industry will take in making the Foundation possible.



J. L. Ober, vice president Scott Paper Co.

"The University of Maine was the first school in America to train men for the pulp and paper industry," President Hauck said. "In 1913 the first course in pulp and paper technology was given at the university.

"It is, therefore, appropriate," he added, "that a Foundation should be established at Maine where university training for the pulp and paper industry was first undertaken nearly 40 years ago. This Foundation will be of invaluable assistance in strengthening our pulp and paper program.

"The University is pleased that the industry is looking to us to help provide its future leaders," he said, "and we deeply appreciate the assistance which is being given in establishing the Pulp and Paper Foundation."

J. L. Ober, vice president of the Scott Paper Co., Chester, Pa., gave a detailed presentation of the need for the Foundation, its objectives, and benefits.

Pointing out that the pulp and paper industry must attract and develop more outstanding men with special training, Mr. Ober said the industry depends on two sources—in-the-plant and in-the-school training—for men for supervisory and management positions.

Strongly advocating university instruction, Mr. Ober explained that there are now 921 pulp and paper mills seeking the services of the approximately 120 students who are graduated each year from schools with pulp and paper curricula.

"This means that only one graduate is available right now for every seven mills," Mr. Ober declared.

Referring to the University of Maine as the "cradle of industry's technical training," Mr. Ober said the University has "the experience and necessary know-how to train men for the industry. . . . Maine men have been recognized not only for their willingness and their capacity for work, but also

for the practicability of their training.

"Nearly 40 years of practical experience, experimentation, study, and service have built a fund of knowledge at Maine which is used in the training of men for the industry."

Mr. Ober pointed out that the University of Maine has the facilities and equipment necessary to make the objectives of the Foundation a success.

It is proposed that sufficient funds be raised through the industry, its affiliates, and suppliers, to implement the program of the Foundation, since it is to be operated for the benefit of the pulp and paper and allied industries and their member companies.

The Scott Paper Company official said the following benefits would be derived from the Foundation:

1. More students will be interested in study and work in the field of pulp and paper.

2. Men of greater potential ability, intelligence, and aptitude will be attracted to and will prepare themselves for careers in the pulp and paper industry.

3. With more and better qualified students interested in preparing themselves by in-school education, a better screening job can be done. Those students will be accepted for the pulp and paper course who can benefit from this specialized training. The five-year course will permit more intensive as well as broader training.

4. With the provision of greater opportunities for fundamental and applied research, the industry will be assured of the development of new knowledge and its practical application to the expansion and betterment of our companies and of the entire pulp and paper industry.

Members of the finance committee for the Foundation are J. L. Ober, vice president, Scott Paper Co., Chester, Pa.; P. S. Bolton, research director, Robert Gair Co., Inc., Uncasville, Conn.; John B. Calkin, director, Department of Industrial Cooperation, University of Maine; F. A. Soderberg, General Dyestuff Corp., New York; Ralph A. Wilkins, vice president, Bird and Son, Inc., East Walpole, Mass.

Members of the curriculum committee are Clifford Patch, technical director, Eastern Corp., Brewer, Me.; Everett P. Ingalls, mill manager, S. D. Warren Co., Cumberland Mills, Me.; Philip S. Bolton, research director, Robert Gair Company, Inc., Uncasville, Conn.; Dr. Edward F. Thode, associate professor of chemical engineering, University of Maine; Professor Lyle C. Jenness, head of the Department of Chemical Engineering, University of Maine.

Hoberg to Expand... Add New Paper Machine

▶▶▶ NEARLY THREE million dollars will be expended by Hoberg Paper Mills, Inc., Green Bay, Wis., to complete its expansion program during the next two years. A new paper machine and a pollution abatement plant are listed among the major improvements.

J. M. Conway, president and general manager, said that the program will get under way at once and should be completed by the end of 1951.

Principal additions will include the new paper machine, a new laboratory, several new converting machines, the pollution abatement plant, a new store room for Division "B" maintenance and possibly a new warehouse on the Division "A" property.

Other improvements will consist of the rebuilding of its No. 2 paper machine, the addition of combustion control equipment in the Division "B" boiler plant, improvements in the sulphite mill, installation of another dust collector unit at the "Division "A" paper mill, and additional save-alls for both divisions.

Beloit Paper Machine

The order for the new paper machine has been placed with the Beloit Iron Works. Mr. Conway pointed out that it will have a wire width of 160 inches with 148½-inch trim, and will include a 12-foot diameter Yankee dryer with a rating of 125 pounds pressure. Installation of the paper machine alone is estimated at approximately a million dollars.

Mr. Conway said it is the company's intention to put the new paper machine in operation by July 1, 1951. It will be known as machine No. 1. The original Machine No. 1 was dismantled years ago. Need for the new machine has been apparent for some time.

Build Lab and Storeroom This Year

Construction of the new laboratory and the Division "B" storeroom is to start within the next few months. The laboratory will be located just north and east of the present facilities. Besides providing additional space and better equipment for research and technical control, it will centralize various types of work now being performed in different locations. Aside from a description as a brick structure, no further details of the building were announced except that it will also contain a new first aid room and time clock room for Division "B" employees.

The storeroom, now occupying quarters in one end of the present laboratory and office building on the Division "B" property, will be moved to a new location adjacent to the machine shop at that division. When complete, the old building will be dismantled.

Begin Pollution Abatement Next Year

Mr. Conway said plans for the pollution abatement plant will be complete by the end of this year. A committee, named by him, has been at work on the project for several months, and a satisfactory solution for partial abatement is assured, he said. When complete, the plans will be presented to the state water pollution committee, and if they are approved, construction of the plant will begin.

In all probability the plant will be located near the new laboratory. According to present estimates, the cost of construction will be about a million and a quarter dollars.

Continuous Winders in Converting

Several new rewinders have been ordered for the Hoberg converting department. Rearrangement of this department is being planned, with the majority of the machines being replaced by continuous rewinders.

The old boiler house on the Division "A" property, vacated after a new modern steam power plant was built almost a year ago, will be remodled to become either a storage warehouse or provide space for maintenance facilities. Additional car loading area is planned in anticipation of the increased tonnage which will be provided by the new paper machine. The shipping department will have its face lifted further by the addition of new truck loading docks and the possible acquisition of automatic trucking equipment. Pallet loading and storage of pulp has already been inaugurated, with automatic Towmotor and Yales trucks being used in warehousing pulp. They are also used in connection with the recently installed hydrapulpers at Division "A".

Most of the projects are in the preliminary stages of engineering, Mr. Conway said. He added that although the program is intense, a great deal of the construction work will be jobbed out in order to complete it according to the schedule outlined.

Fibre Wall Panels Win Merit Award for Upson Co.

A Merit Award of the American Society of Industrial Engineers was bestowed on The Upson Co., Lockport, N. Y., recently in recognition of "the high degree of quality attained by The Upson Co. in the manufacture of laminated fibre wall panels."

W. Harrison Upson, company president, accepted the award from Robert Law Crinnian, national president of the society, for the firm in an informal ceremony attended by Harry R. Shedd and Averill E. Calver, company vice president and sales director, and advertising manager, respectively.

The Merit Award is the highest honor the society can confer on organizations considered to have made the most outstanding contributions to the advancement of the industrial arts and sciences in their respective fields. One of 15 such awards to be conferred in 1950, Upson's award was given for the perfection of StrongBilt Panels used in dry built, full-wall construction in thousands of housing units throughout the country.

ASIE 1950 Merit Award received by W. Harrison Upson, Jr., president The Upson Co. (right) from Robt. Law Crinnian, national president of the Society

Watervliet Program of Modernization Nears Completion

The past year's activities at Watervliet Paper Co., Watervliet, Mich., are reported to have entailed an expenditure of $385,898 for the mill's modernization program. The third and last of the modern coaters, replacing nine machines of an older type, was placed in production in August, 1949; coated paper output since that date has been the greatest in the mill's history.

Completion of the modernization program, begun four years ago, will require an outlay of approximately $350,000 to cover commitments already made for installation of a new calender, cutter, and related items.

Import Notes

Several investigations are being made into import rates of various paper products. High priced English papers, including so-called offset printing paper and planograph paper, which have been entered at the book paper rate are being investigated to determine whether they should be dutiable at the higher rate for writing paper. Colored paperboard from Canada and made of screening is at the same time being tested to determine whether it is test container board or a colored box board.

Importers have protested to the United States Customs Court against the rates of duty assessed by Customs Officials. These include: English dart boards, classified as manufactures of paper at 35 per cent, claimed to be dutiable as coated paperboard at 30 per cent; converted rolls of toilet paper classified for duty as manufactures of paper at 35 per cent, claimed to be dutiable at 15 per cent as paper cut into sheets; three shipments of English paper napkins and serviettes, classified for duty as manufactures of paper, are claimed to be dutiable at 15 per cent as paper cut into shapes; four shipments of Japanese tissue paper held by Custom officials as having been undervalued by omission of Japanese inland freight.

Can. P&P Industry Will Offer Series of Lectures

A series of eight illustrated lectures on the pulp and paper industry was opened January 17 by the Canadian Pulp and Paper Industry, Montreal, Canada. The first lecturer, Frank L. Mitchell, manager, Canadian Pulp and Paper Association, spoke at McGill Chemistry Building, Montreal, concerning the "Importance of the Pulp and Paper Industry to Canadians."

Dr. Otto Maass, C.B.E., general director of the Pulp and Paper Institute at McGill, in making this announcement stated that the series of lectures will be along the lines of the course sponsored by the Institute two years ago and subsequently given at the University of British Columbia.

Other speakers in the series will include: W. A. E. Pepler, manager woodlands section, Canadian Pulp and Paper Association, Montreal; F. W. Bradshaw, chief engineer, Consolidated Paper Corp., Grand 'Mere, Quebec; Dr. W. B. Campbell, director of technical research at the Institute; J. S. Hart, research associate of the Institute; Douglas Jones, secretary-engineer of the technical section, Canadian Pulp and Paper Association; and T. H. Robinson, manager industrial relations, Canadian International Paper Co., Montreal, Canada.

Tree Farm System Grows to Record High

At the end of 1949 America had a record high of 20,010,102 acres of privately owned timberland dedicated to the perpetual production of wood for commercial use.

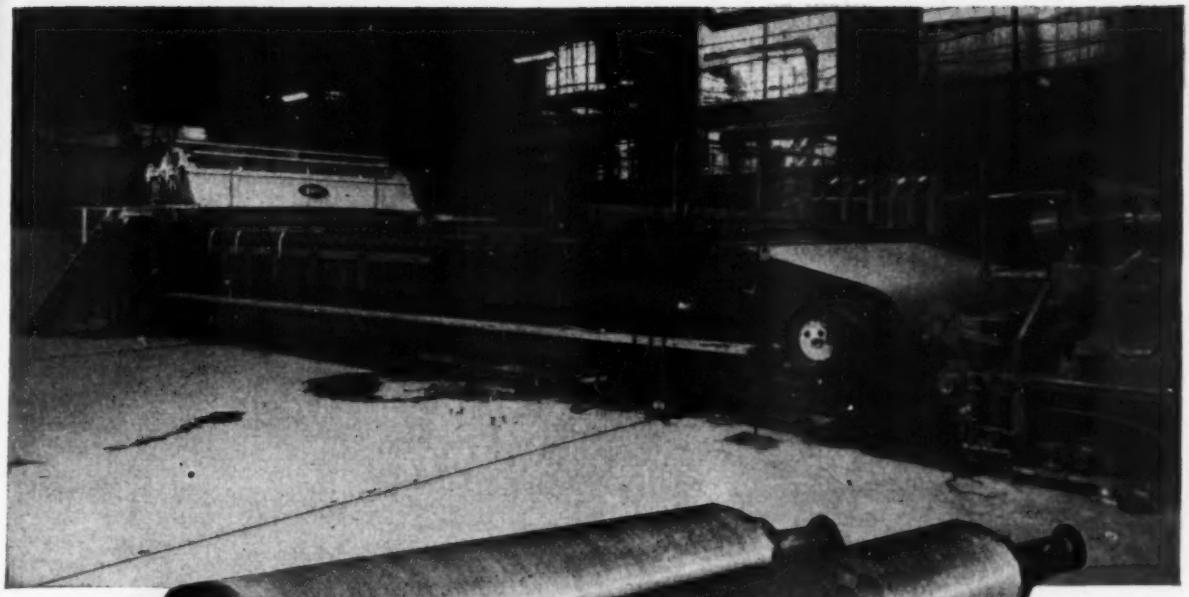
This acreage, representing 2,242 different ownerships in 27 states, is certified in the American Tree Farm System. During 1949 almost 3,000,000 acres were added to the program, according to James McClellan, chief forester for American Forest Products Industries, Washington, D. C.

Mr. McClellan also commented that the increase in tree farm coverage during 1949 was larger than any since 1942. Michigan, with 628,751 acres, led the country in new tree farm acreage; Florida was second, with 419,836 acres; Oregon took third place with 387,471 acres; North Carolina had 308,922 acres; and Washington acres totaled 257,226.

For the fifth consecutive year the southern states led all other regions in tree farm growth with a total acreage of 1,151,759. The Western Pine area showed the second largest growth and the Lake State region was third.

The American Tree Farm System, begun in the state of Washington in 1941, spread to 4 new states during 1949, when Rhode Island, Michigan, Missouri, and North Dakota became members.

Chief Forester McClellan predicts that 1950 will also be an outstanding year for forest protection and tree growing.



Downingtown suction couch roll installed at the mill of P. H. GLATFELTER CO., Spring Grove, Pa.

Two Downingtown suction couch rolls ready for shipment and installation. Double suction boxes of these rolls combine the virtues of a wide, low vacuum box and a narrow, high vacuum box in ONE roll.

5 BIG ADVANTAGES of Suction Couch Rolls with Double Suction Box

A Suction Couch Roll with a double suction box is a Downingtown standard—no special construction is needed to give you these 5 BIG advantages: (1) Maximum water removal at the couch assures SAFER RUNNING thru presses at high speed. (2) Large suction area absorbs carry-overs from the flat boxes and helps PREVENT them from causing BREAKS. (3) VACUUM is applied GRADUALLY.... In many mills, where high vacuum is used in a single box, it has been found that fibres are drawn into the wire, thus hindering easy removal of the sheet from the couch and sometimes even causing picking. (4) A double box in one roll means that free air is NOT HANDLED TWICE, as it is when a combination of suction couches is used. (5) Minimum vacuum equipment and MAXIMUM WATER REMOVAL. The double suction box consists of one wide, low or moderate vacuum box and one narrow, high vacuum box. (6) Due to Downingtown roll construction, which permits a rear suction, the two box connections are made at front and rear. This eliminates the constriction of air passages which is necessitated when both connections must be made at the front.... This development is just one of many perfected by Downingtown engineers over the years. Write for information about our other suction rolls, too, including single suction box, cantilever suction couch rolls and suction press, drum, extractor, and cylinder couch rolls.

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Titanox pigments are equally applicable to beater-pigmented papers, tub and calender sized stock and coated stocks. Their uniform fineness assures easy, complete dispersion, speeds production and lowers costs.

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Our Technical Service Department is always ready to serve as a partner in solving your paper pigmentation problems. Write us today for further information. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; 104 South Michigan Avenue, Chicago 3, Ill.; 2600 South Eastern Avenue, Los Angeles 22, Calif. Branches in all other principal cities.

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Lake States Yeast Corp. Adds Equipment To Speed Research

To speed up development of the torula yeast process for reducing spent sulphite liquor pollution, the twelve sulphite pulp mills owning the Lake States Yeast Corp. and its experimental plant at Rhinelander, Wis., are putting more than $60,000 additional into this enterprise, it was announced today. The primary use of this money will be to pay for process improvements which the 15-months operating experience of the plant have uncovered as promising possibilities.

Already under construction and now approaching completion is a brand-new installation to reduce cooling-water costs, and thus to keep operating expense within the limits dictated by the necessities of industry economics. "Biggest of the problems as yet unsolved by the Rhinelander experimental plant," stated J. M. Holderby, general manager, "is to produce the dried torula yeast for food and feed purposes at a cost which would permit sulphite pulp mills to treat their spent liquor by this process without suffering losses greater than they can stand. We must find out how to hold costs low enough so that most of the treatment expense can be recovered by the sale of dried yeast to feed mixers and other markets. That is the only way in which the scientifically proven ability of torula yeast to reduce the oxygen demand of spent sulphite liquor can really help much to solve the practical problems of pollution control."

Besides the cooling-water installation now nearing completion, the sulphite industry's engineering experts and top executives have approved other plans for improving the technical aspects of liquor treatment and yeast production at the Rhinelander experimental plant.

These plans are the outgrowth of the experimental operating experience thus far, and require large scale testing to prove what they can accomplish. The necessary engineering designs are now going ahead, and orders will soon be ready for placing with builders of equipment. Completion of these additions is scheduled for early next summer.

If the new process improvements work out as the scientists hope, they expect that the yeast plant can cut down still further the oxygen demand of the spent sulphite liquor treated here. The only significant pollutional effect that sulphite liquor has in a stream comes from reducing the oxygen available for fish and other aquatic life. Therefore, as the sulphite pulp industry learns how to cut down this characteristic of its spent liquor, it makes progress toward stream clean-up.

The sum that the owner mills voted out of their treasuries and into their torula yeast experiment is $62,200. They did it by having Lake States Yeast Corp. issue this sum in capital stock previously authorized, and they apportioned the amount to the twelve co-operating paper companies according to their previous shares of ownership.

Four Mills in Wash. Given Pollution Clearance Deadline

The Washington State Pollution Control Commission has set an 18-month deadline for four pulp and paper companies to eliminate pollution of state waters by waste sulphite liquors.

The September, 1951, deadline applies to the Rayonier, Inc., plant at Hoquiam; Weyerhaeuser Timber Co. plant at Everett; Soundview Pulp Co. mill, also at Everett; and the Crown Zellerbach plant at Camas.

Representatives of three of the four companies agreed with the objectives of the program, but doubted that the pollution can be eliminated in the time set.

Edward F. Eldridge, pollution control commission director, estimated that the control program desired would cost the Soundview company about $6,000,000, the Weyerhaeuser company approximately $4,000,000, the Crown Zellerbach firm around $6,000,000, and Rayonier between $2,000,000 and $3,000,000, although increased efficiency should nearly liquidate these expenses.

New Paper Machine at Champion's Texas Division

After years of research and careful planning, construction and training, a new addition to the Pasadena, Texas, mill of The Champion Paper and Fibre Co. started production early this month. Champion now has three fourdriniers and one cylinder machine operating in their Texas Division.

This new paper machine is designed to produce high quality machine-coated grades at speeds up to 1200 feet per minute. This tonnage will supplement the bond, envelope, tablet and other grades which the Pasadena mill already had in production.

A sheet of machine coated paper trimming 135 inches will be made on the new machine. When the break-in period of testing and adjusting is completed the machine will be producing from 60 to 70 tons of paper every 24 hours to swell the paper and board production of this Champion mill to approximately 350 tons.

The new machine was developed by Champion's Research and Engineering Department and the complete erection job was handled by Champion's mechanical crews at Pasadena. The machine was built and erected in record time with the co-operation of four nationally famous paper machine builders. The supercalender was constructed by the Appleton Machine Company at Appleton, Wis.

An additional 150 employees will be working at Champion's Houston Division to staff this machine and its supplementary equipment. For the past four months groups of Texas employees have been visiting Champion's plant at Hamilton, Ohio, to receive special training designed to give maximum production of perfect paper at the earliest possible date.

Canadian Import Regulations To Be Relaxed April 1

Plans of the Canadian Federal Government to remove or relax many of its import restrictions during the next six months because of the improvement of Canada's gold reserves and American dollars include relaxation of paper products imports. Announced February 8, the relaxation will be effective April 1.

Paper products now on the prohibited list may then be imported from scheduled countries under open general permit against quota and from a non-scheduled country "as though the said goods were included in Category 4 of Section II, i.e., without restriction under the Emergency Exchange Conservation Act.

The goods included are: tarred paper and prepared roofings, including shingles; sheathing insulation, not including fiberglass; building board; chipboard; newsboard; strawboard; testboard; corrugated board and all similar boards, manufactured wholly or in part of vegetable fibers, but not including electric insulation board, match stem stock, shoe board, automobile board, book binder's board, or press board; bristol board; artist's board; photograph mounting board; picture matting board and showcard board; flock coated board or paper; wax coated paper; blotting paper, not printed; accoustic wallboards, accoustic pads

and accoustic tile of all kinds; and roofing and shingles of saturated felt.

Other products upon which the regulations will be relaxed are: cups, dishes, plates, forks, spoons or drinking straws made of paper cardboard or vegetable fibers; wrapping paper, including box covering paper and wrappers, printed, embossed or otherwise decorated; and photograph mounts manufactured from paper or paper board.

Wrapping paper of all kinds, but not pasted, coated or embossed, will be similarly affected by the new ruling, as will be papers and paperboards or fiberboards which have embossed or other decoration upon a surface of two or more colors.

Empty containers which are wholly or partially manufactured from paperboard or fiberboard having affixed thereto paper the surface of which is in two or more colors, or is embossed or otherwise decorated, end the list.

All emergency import restrictions will be removed from printed labels of all kinds.

Kimberly-Clark Plans Expansion of Canadian Mill

Plans have been made for a $3,000,000 expansion program which will double the production capacity of the Kapuskasing, Ontario, mill of Kimberly-Clark Corp., Neenah, Wis. The mill was completed in 1945 as part of a large-scale building program which was achieved only last year.

The new plant facilities will be used to manufacture creped wadding which Kimberley-Clark manufactures for use in brand-name paper products. Work will begin immediately on the expansion, expected to provide work in the woods for 250 to 300 additional men.

Work on Columbia Cellulose Pulp Mill Progressing

Construction of a new $31,800,000 dissolving pulp mill at Columbia Cellulose Co., Watson Island, British Columbia, Canada, is progressing favorably, according to company officials.

Considerable significance is being given to the construction program because of the increasing demand for rayon yarn in the world market; the American market alone consumed approximately 1,000,000 pounds in 1949. Columbia Cellulose will supply wood pulp to Celanese Corp. of America, its parent company.

Steel construction work has progressed to the point that 5 buildings have been completed and 11 more are up and nearing completion. Roof slabs and wall panels have been erected on several, closing in the building for machinery installation during the winter. Heavy machinery and equipment, including large pulp washers, the hydraulic barker and the whole-log chipper, is on the plant site and is expected to be installed by April 30. Additional equipment is due to arrive soon, and will be installed as the construction of buildings and foundations progresses.

Company logging operations will begin shortly. Meanwhile, the logging is being done by independents in the area. Columbia has acquired a moderate inventory of logs which will be augmented during the year.

The dissolving pulp plant will have a daily capacity of 200 tons of high alpha pulp.

Judgment Entered Against Frontenac For Back Wages

Acting in the interest of 58 employees of Frontenac Paper Corp., Dexter, N.Y., the industrial commissioner of the state of New York recently entered a default judgment against the Frontenac corporation in the amount of $8,091.60.

The amount includes slightly more than $7,800 back wages due the employees when the mill shut down early last summer, plus interest and court costs. No attempt was made to defend the charges.

New Dryers Will Up Production at Gardner

Production of high grade folding boxboard on the No. 4 machine at the Lockland, Ohio, plant of Gardner Board and Carton Co., Middletown, Ohio, will be increased with the installation of additional drier rolls.

An order for the construction of ten jacketed steel dryer rolls designed for a working pressure of 100 psi was placed with the Lukenweld division of Lukens Steel Co., Coatesville, Pa., last fall. Installation is expected some time this month.

The new dryers, measuring 42 in. O.D. x 138 in. face will be located relatively close to the wet end of the machine in a bank of dryers totaling 122. With a wider face, the new dryer rolls will increase by several inches the present 125 inch trim.

At the same time, the company is planning to begin construction of a new concrete, brick and steel building at the Lockland site in July. A $1,000,000 structure 400 ft. x 240 ft., it is planned to house the Gardner retail box department, which was formerly kown as the folding box department. The present retail box department will be used by the carton department, now expanding its operations with the installation of the first two rotogravure presses to be used in the carton industry.

Escanaba Supervisors Elect Officers for Newly-formed Club

Forty-six supervisors of the Escanaba Paper Co., Escanaba, Mich., elected officers for their newly organized club at a dinner meeting recently. Edward H. Packenham will serve as the club's first president, while Francis Rogers was re-elected vice president and D. S. John Andrews was chosen as secretary-treasurer.

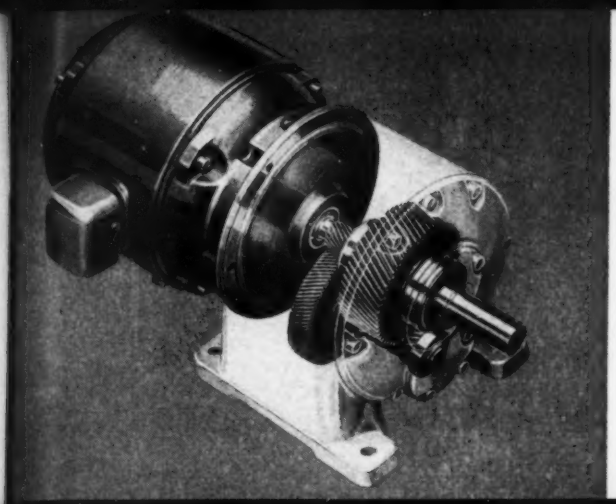
A general discussion of policy and purpose of the club was held at the meeting, and A. J. Miller, assistant director of industrial relations for the Mead Corp., discussed the operation of similar clubs in various divisions of the corporation. The club was organized to afford foremen an opportunity for discussing common problems and to provide opportunities for social activities among the men.

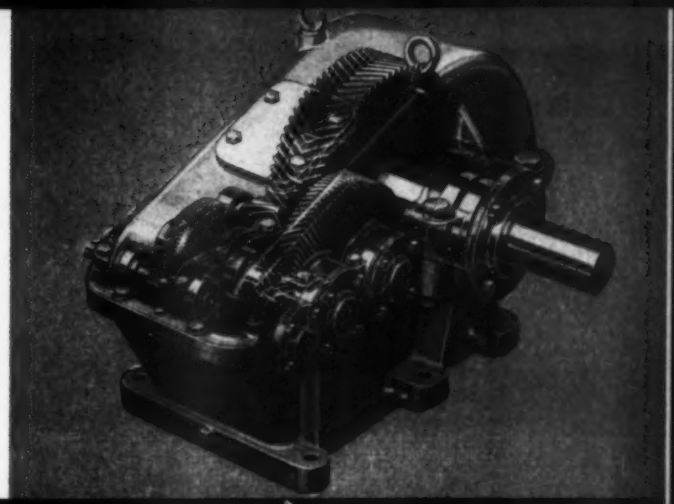
Experimental Forest Sponsored by Maine Mills

Nine pulp and paper companies have purchased 3800 acres of land near Bangor, Me., for use as an experimental forest to be run by the U. S. Forest Service. Leased to the Forest Service, which will pay for and control its operation for the length of a 99 year lease, the land will be called Penobscot Experimental Forest.

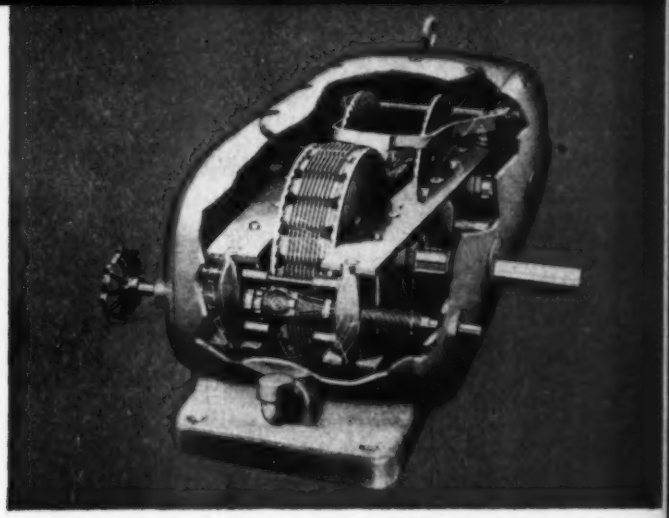
The first such tract set up by a group of co-operating paper mills anywhere in the United States, the forest will be administered through Thomas F. McLintock, head of the Forest Service Research center at Bangor, Me., by the Northeastern Forest Experiment Station in Philadelphia.

Sponsoring companies are Great Northern Paper Co., Millinocket, Me.; Hollingsworth & Whitney Co., Boston; Oxford Paper Co., New York; Eastern Corp., Bangor, Me.; S. D. Warren Co., Boston; Penobscot Development Co., Boston; International Paper Co., New York; St. Regis Paper Co., New York; and Dead River Co., Bangor, Me. Mr. McLintock has stated that these companies plan that the forest shall not be used for the benefit of the mills alone, but that research will be directed toward helping timberland owners in general.





is Speed Reduction Your Problem?



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Link-Belt's large selection of single, double and triple reduction Herringbone Gear Drives adequately fill the bill for small, moderate or large horsepower speed reduction requirements. A mighty good answer to your speed reduction problem. May we send Book No. 1819 so you can see for yourself?

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Glatfelter Company's Stream Improvement Program

The value and need for stream improvement have been recognized by the P. H. Glatfelter Co., Spring Grove, Pa., for a long time. As a result of this interest, the company has for many years directed considerable effort and appreciable investment toward the effective treatment of mill wastes and their disposal.

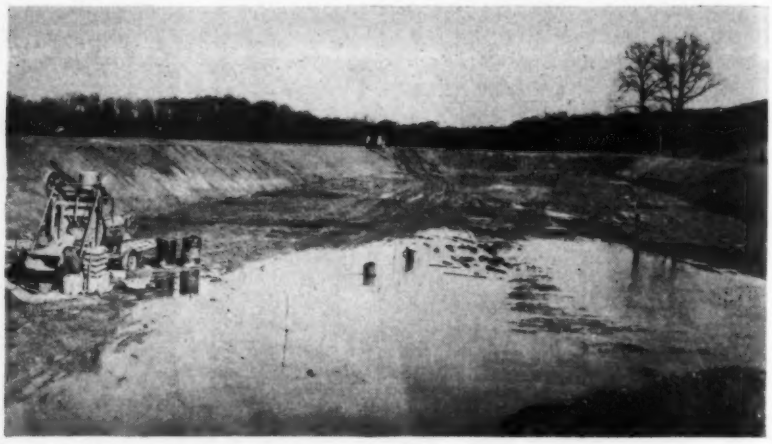
No standard methods for the treatment of pulp and paper mill wastes exist, as conditions vary with each mill. Therefore, approximately two years ago the company built a pilot test plant to enable them to design a treatment plant suitable to its needs. The pilot plant was in operation for approximately one and a half years and much valuable information was obtained.

The plans for the treatment works were developed jointly by the Glatfelter company and their consulting engineers, Havens & Emerson, of New York, who specialize in this type of work. Based on practical findings, plus earlier advice from the State's engineers and the National Council for Stream Improvement, plans were completed and forwarded to the State Sanitary Water Board last year. The permit from the Sanitary Water Board for the construction of the treatment works was received, effective as of November 1, 1949.

On account of the approaching winter, the company started immediately with the construction of the two filtration basins, which are now nearing completion. The bids for the other part of the treatment works are being submitted and orders are being placed at this time.

Just as soon as weather permits, the work on the main treatment plant near the paper mill will start.

The cost of the work now underway will be approximately $300,000.



One of the new settling basins being built by Glatfelter Co. to improve conditions of the Codorus

Excello Expansion Program Nears Completion

A three-year expansion program expected to cost $1,500,000 is in progress at the Cincinnati plant of the Excello Paper Products Co., a subsidiary of Mead Corp., Dayton, Ohio. Begun in April, 1947, the job is expected to be completed in April of this year, when installation of high-speed laminating machines for heavy weight boards is done.

The expansion program had a setback in January, 1948, when a fire caused considerable damage. At that time, 22,000 sq. ft. of space was added, most of which is devoted to conversion of raw materials from the paper mill into the finished products. A second floor was added to provide 65,000 sq. ft. of floor space for occupancy by Mead Board Sales Co., sales subsidiary of the Mead Corp., which also handles sale of the Excello products.

The plant now produces 75 to 80 tons of paper a day in a mill completed in 1949.

Gould Paper Division Sells Electrical Distribution System

Sale of an electrical distribution system serving Lyons Falls, Turin, Constableville and adjoining New York State rural communities was recently completed by the Gould Paper Co. division of Continental Can Co., Inc., Utica, N. Y. The new owner, Niagara Mohawk Power Corp., took control March 1.

Purchase of the system, which has provided electric service to the New York communities for the past 50 years, was at an undisclosed price subject to the approval of the Public Service Commission. Gould Paper Co. has only recently been a part of Continental Can.

Escanaba Installs New Size Press

A size press has been installed on the No. 2 machine at Escanaba Paper Co. plant at Escanaba, Mich. The press will be used principally to size offset printing paper, which now constitutes about a quarter of the paper made on the No. 2 machine.

The new sizing operation will use a corn starch solution as a sizing material rather than the rosin type now added at the beaters, and will be applied to both sides of the finished sheet of paper by means of a two roll press.

Preparation of the starch solution will be done in the color building by new equipment especially designed for the purpose and installed several months ago. The offset printing paper produced on the No. 2 machine will be used mainly for the printing of school books, work books, and color books.

It was necessary to remove two dryers, move six other dryers, construct a concrete floor, and make numerous piping changes before the new equipment could be set up.

SCHEDULED FOR completion within ten months is a $1,500,000 addition to the bag factory of Union Bag and Paper Corp., Savannah, Ga. Still to be erected is another addition, a sixth unit which will be used to utilize hardwood for the production of kem pulp.

Headquarters of Brown Corp. Moved to La Tuque

Headquarters of Brown Corp. were moved from Quebec City to La Tuque the last of February. Brown Corp. is the Canadian subsidiary of Brown Co., Berlin, N.H.

The company announced plans last month to expend $1,500,000 at La Tuque for plant extension and development of new forest products. The firm now manufactures pulp at La Tuque for shipment to the papermaking plant at Berlin.

SIXTEENTH DISTRICT SALES office of International Paper Co., Bagpak Division, is the recently-opened Denver branch. Russell A. Gair is district sales manager.

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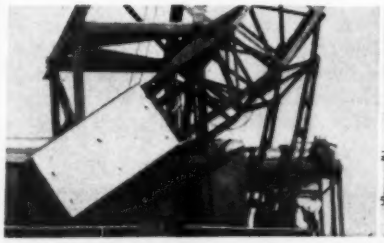
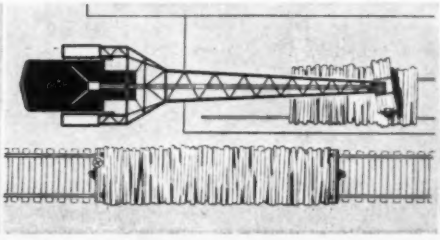
Touch just one lever . . . the boom swings smoothly up or down . . . but the load of pulpwood in the grapple moves toward you, or away from you in a horizontal plane! That, in simplest terms, is the amazing difference in the American Pulpwood Handling Crane. Super-live, super-safe boom action makes it a wonder worker for fast, accurate, low-cost pulpwood handling. If you are in a tight spot—literally or figuratively—this great new crane can speed your work, cut your costs. Mail the coupon below for detailed information.



COUNTERWEIGHTED BOOM. To raise or lower boom, only enough power to overcome inertia is needed. You "travel" and "spot" the load by this free booming action alone!



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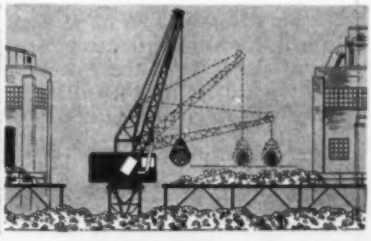

RAPID BOOM ACTION swings boom through its full arc in 15 seconds. *Boom cannot be dropped, over-raised or over-lowered.* It reverses automatically at end of arc.

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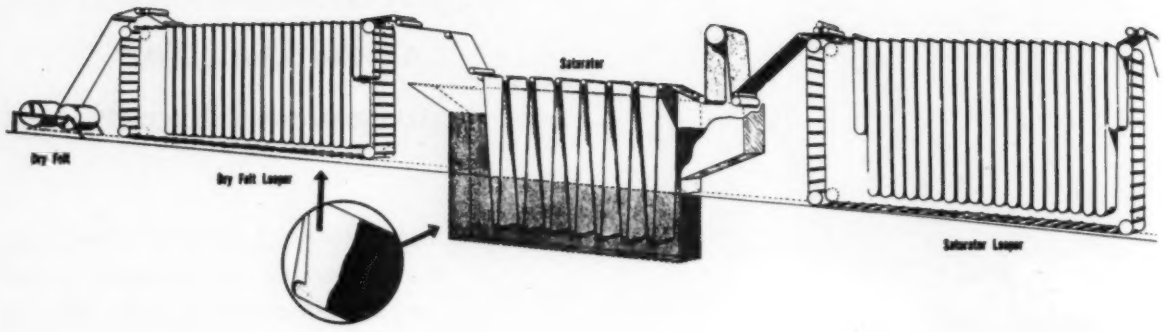


How Bird Makes Asphalt Roofing

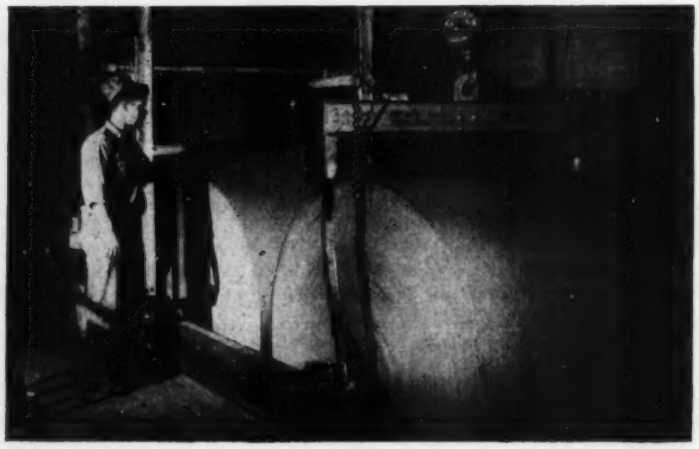
▶▶▶ MOTORISTS on the busy Boston-Providence Highway—Route 1—frequently pass huge trailer-trucks piled high with rolls of dry felt. Not many of these travelers would guess that those gray-colored rolls have any connection with the many colored and rugged-looking asphalt shingles that protect the roofs of millions of American homes. Those rolls of dry felt provide the base for every asphalt shingle and every yard of roll roofing made by Bird & Son's Norwood, Mass., plant.

Actually, the first step in the process does not take place at the Norwood roofing plant at all. The felt base for asphalt shingles is manufactured on fourdrinier machines at the East Walpole (Mass.) and Phillipsdale (R.I.) mills of Bird & Son., Inc., and in a new plant just put into operation in Louisiana, to supply the company's roofing plant at Shreveport.

To supply the Norwood plant, jumbo rolls of dry felt, some of them as much as six ft. in diameter and nine ft. wide, are carried over the road from Phillipsdale to Norwood. It's these truckloads of felt that the drivers on Route 1 see frequently as trucks ply back and forth making several trips a day to keep an adequate supply of felt.

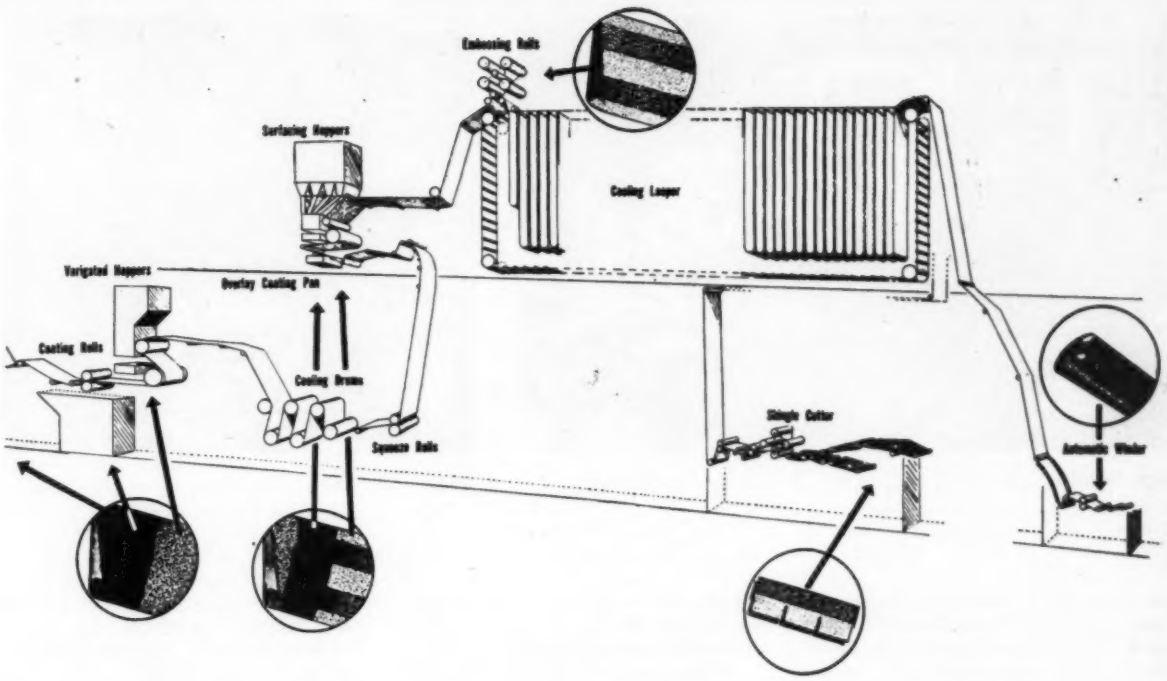
Typical of the Bird & Son roofing operations is the new No. 9 machine, just remodeled and put into use with all of its new equipment in the fall of 1949. While the shingle-making process is basically the same as that used by all manufacturers of asphalt shingles, each machine has refinements developed by Bird engineers. For the most part, this machine was designed by the company's own engineering staff and built to its specifications. Let's follow a roll of felt through this newest machine.

A Towmotor truck takes the roll of felt from the unloading platform and delivers it to the back end of the machine where a hoist places it in position on an unwind stand. The felt sheet is



Dry Felt

Coating Rolls



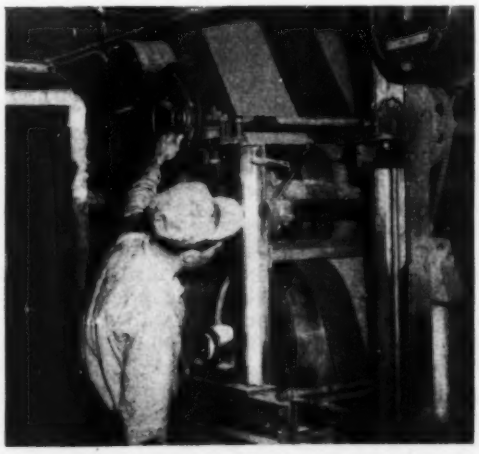
first sent into a dry felt looper which hangs the felt in festoons from which it can be fed into the machine as needed. These extra loops or festoons of dry material allow the machine to operate continuously. When a new roll of felt is being set in place and spliced on, the machine can continue operating by using up the extra felt in the looper.

From the dry rack, the continuous sheet of felt goes through steaming saturation pans where it is thoroughly saturated with the hot asphalt. The process calls for three separate immersions. The quality of the felt is such and the temperature and consistency of the asphalt is such that the entire sheet is completely filled. This means high quality roofing. The sheet then feeds into a second looper to allow the asphalt to penetrate.

Surfacing Operations

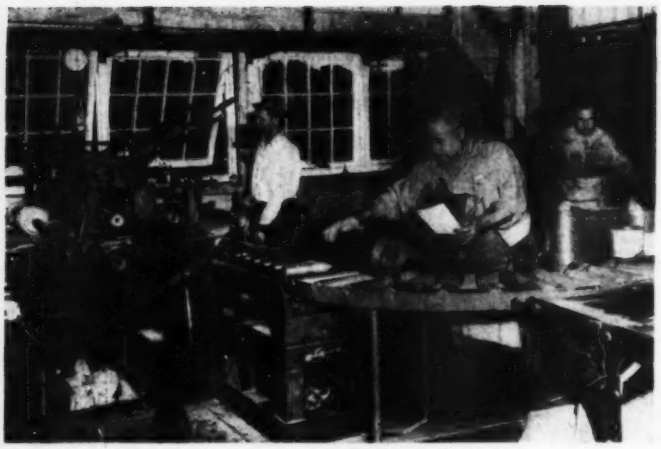
Next, more asphalt is applied to the upper surface and the coating material is applied. When roll roofings are made, the surface may be either fine granules in black or green slate, or, in the case of smooth surface roll roofing a coating of talc is applied. When shingles are being produced, a surfacing of granules is also used and becomes the first protective layer, on top of which the thick butt, exposed section of the shingle is put later. The sheet does not stop in its travels to receive any of these applications of asphalt or surfacing material. It is traveling continuously and at a good rate of speed. Every section of the machine is geared and timed to apply precisely the right amount of material at precisely the right time. To make certain that the granules are there for keeps, the sheet of roofing material passes through an embedding section consisting of a series of cooling rolls and squeeze rolls which firmly fix the granules in place.

If roll roofings are being made, the material moves from the embedding section directly to another looper called

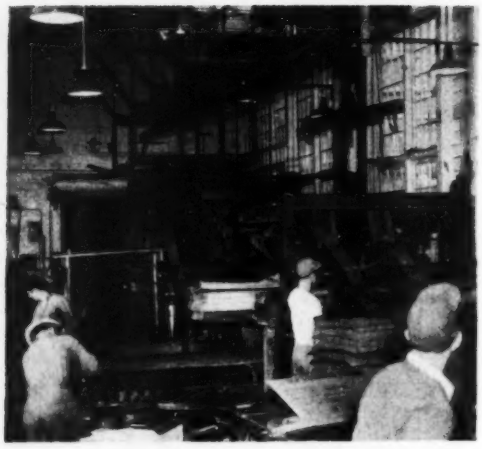


Cooling Drums

Cooling Looper



Roll Winder



Shingle Section

the finish rack. Here it is cooled by hanging again in loops. The new No. 9 machine has a finish rack 115 feet in length which can accommodate a third of a mile of material. This rack serves the purpose of cooling the material before it is wound into rolls or cut into shingles. It also provides surge capacity that enables the machine to keep in constant operation even though there may be temporary shutdowns for adjustments at the farther end of the machine where the material is being finished and wrapped.

As already indicated, No. 9 machine is equipped to make either roll roofings or shingles. Most Bird & Son shingles today are made by the thick butt process first developed by the company more than twenty years ago. When shingles are being made, the job is only half completed after the first layer of surfacing material has been applied.

Asphalt Shingles

To make the thick butt shingles, the sheet of roofing material already covered with one complete surfacing of granules is fed into a section of the machine where bands of asphalt are applied to sections of the sheet; there the shingle butts will come. Over this strip of hot, sticky asphalt, a second layer of granules is poured. Granules, of course, flow over the whole sheet but adhere only where the hot asphalt has been applied. Then, as the sheet revolves over a drum on its way to another embedding section, the excess granules fall off and the granules held by the hot asphalt remain to be embedded and make a second layer at what will eventually be the butt end of each shingle. The surface granules may be in solid colors such as black or green or red or they may be blending of shades such as Slate Blende, Russet Glo Blende or any one of a dozen other attractive shades.

At this point, one final step may be added to give special beauty and distinction to Bird shingles. This is the Weather-tex design which is transferred to the thick butt section of each shingle by a series of revolving dies or embossing rolls. This, of course, is done while the material is still hot and easily imprinted with the design. These operations complete, the material, still in a continuous sheet, goes into the cooling looper the same as roll roofing.

Finishing

Roll goods are quickly wound by a machine which measures, cuts and winds 108 sq. ft. of material into a single roll. When the machine automatically cuts the sheet, the operator of the winder presses a button on the floor with his foot which pushes the roll off the mandrel. He lifts the roll onto a conveyor where other men put in fixtures (nails and cement) wrap them with paper, seal the ends, and stack them on pallets, ready for the shipping department.

When shingles are being made, either three-in-one or twin shingles, the roll roofing finishing section of the machine is by-passed entirely. From the finish rack the long sheet of uncut material feeds directly over the top of the roll goods winder to a special shingle finishing section. First, a huge revolving cutter dies out the shingles, trimming them at the same time, and of course dieing out the cut-outs which form the separate shingles on the thick butt portion of the material. As the ninth shingle lands in each pick-up holder at the end of the machine, a horn blows. After the third horn signal (27 shingles), the pick-up man takes the pile of shingles and sends it along on a conveyor for tying.

There are two separate conveyors leading to tying machines. One man, stationed at the V of the conveyor system, dates and stamps each bundle and then acts like a traffic cop to send bundles first one way and then another to the tying machines. The conveyor itself is a clever piece of apparatus. When traveling along it, the bundles of shingles must change direction. This they do without anybody laying a hand on them—the trick is to use air bumpers which turn the bundles in the direction wanted.

The tying machines are electrically operated. The operator wraps wire around the bundle, then presses a lever causing the bundle to be tied. These machines, standard in the roofing industry, are one of the most ingenious parts of the operation. They enable an operator to accomplish in one simple operation a job that used to be done very laboriously and not half as well with rope.

At the end of the conveyor, the bundles are removed and placed in stacks where the knife-like fingers of fork-lift trucks come along, deftly pick them up and transport them to storage in the shipping department.

Shingles Made Within an Hour

Thus a roll of drab gray felt has become transformed in less than an hour to many bundles of shingles or many rolls of sturdy roofing. Asphalt shingles have been made by Bird & Son since the turn of the century. The quality products now being turned out on No. 9 machine—the roofing mill's latest and best in equipment—are the result of engineering techniques developed and perfected through more than half a century of roofing manufacture.

Use of Charts in Operation Studies

C. E. "DAN" PATCH
Morton C. Tuttle Company

It doesn't matter whether it be paper or sugar, the same principles apply to time study methods. The author has had wide experience in these and many other industries and his methods are worthy of attention.

▶▶▶ FOR MANY YEARS I have been about the country on different industrial assignments and have encountered numerous young engineers who have been interested in a bit of investigating technique which I have used and which they indicate was not included in college courses. This charting method is so simple that others have undoubtedly developed and used it in similar situations.

Observation Charts

It often happens that it is important to have a record of the interruptions to the work being studied, and the relation of this work to other concurrent operations. These time observation charts seem to provide an excellent means of obtaining such records.

It is so many years ago that I do not recall whether my first use of this method was to analyze the operation of an elevator or of an industrial truck, but the elevator will suffice to explain the use of the chart. I expect it would have been worthwhile to have had a special form printed for this purpose, but it was not anticipated that the method would be adaptable to so many situations, and so I have gone on through the years utilizing standard cross-sectional estimating forms.

The sheet is divided into 15 vertical columns with a red pencil, each column representing a minute of time and being subdivided into four divisions, each one representing 15 seconds or ¼ of a minute (Figure 1). Across the top are arranged four lines of figures covering each minute in the hour, 15 minutes to each line. These reference-time points make it easy to pick up a study at any time during the day, entering at the left of the 15 minute period the time of starting of the period, thus indexing the time line. For instance, in the sample shown, the first period starts at 3:00 P.M. indicating the line 0, 1, 2, 3, etc., the second period is 3:15 P.M. indicating the line 15, 16, 17, 18, etc. This arrangement makes it easy, when an observer has to leave his station for any reason or to suspend observations, to record the event and to pick up the study immediately on return.

In the case of the elevator, the vertical width of the horizontal observation record band is determined by the number of floors which the elevator serves. In following other operations a preliminary observation should be made to determine the essential data to be recorded and to devise symbols which will make the task as simple and as economical of time as may be. As many lines should then be allowed to a band as will accommodate the necessary data plus a line or two for entering notes, for it is difficult to foresee all that may happen pertinent to a complete analysis.

Usually, I make up several sheets in advance as in most cases each one will cover only a couple hours of time while more often than not, one wishes at least a half days record and often the study will last more than a full day. I recall one interesting study made of a run of paper, which lasted well into the night shift, so that I had to have my lunch and supper brought to me to be eaten off a barrel head between observations.

These observation charts are placed on a clip board and I tie my ordinary watch (which is an old-time Waltham with a face large enough to be easily read) to the ring of the clip. When observations are begun, I enter the time of the start of the quarter hour, in which I am making my first entry, at the left of the band and pick up at the current minute. It is surprising how quickly one learns to concentrate on a group of relationships while almost subconsciously following the time flow across the sheet.

Reliability of Data

If for any reason the observer must leave his post or suspend observations he should so note on his chart, showing a break in his observations and some note as to why, such as "Conversation with Superintendent," "Relief," or "Explaining to Workman." Insofar as possible, all employees who are coming under observation should have the purpose of the study explained to them in advance.

One assignment is recalled where simultaneous records of two different sets of data required the assistance of a man from the plant office. A study of the complete movements of an industrial truck and the record of all traffic, including this truck, across a street which bisected the plant, was desired. I took the more difficult task of following the truck and stationed my assistant at the point from which the traffic was to be studied.

I passed his station from time to time and noted him making his entries but toward the middle of the morning made a note on my chart "observer No. 2 away." On my return trip he was still away which was noted on my sheet. After a couple more such entries the observer was back on station. When his charts were turned in at the end of the day there was no notation of any absence from station, but every minute was recorded, though not to match with my sheet. When questioned, the fellow stated that he had left his station to have a smoke and had filled in fictitious data.

It is recognized that many individuals have become so addicted to the use of tobacco that they cannot concentrate over long periods without smoking. While management accepts this, it should not accept faked observations.

Elevator Study

Before describing the summary chart, it may be well to run along the field chart a short distance, starting with 3:00 P.M. At that time the elevator was idle at third floor level. Aboard the elevator were nine employees who were on their way from the basement to the company lunch room for the smoking period and to get coffee or coke. There was also on the elevator, a truck load of sheeted paper which

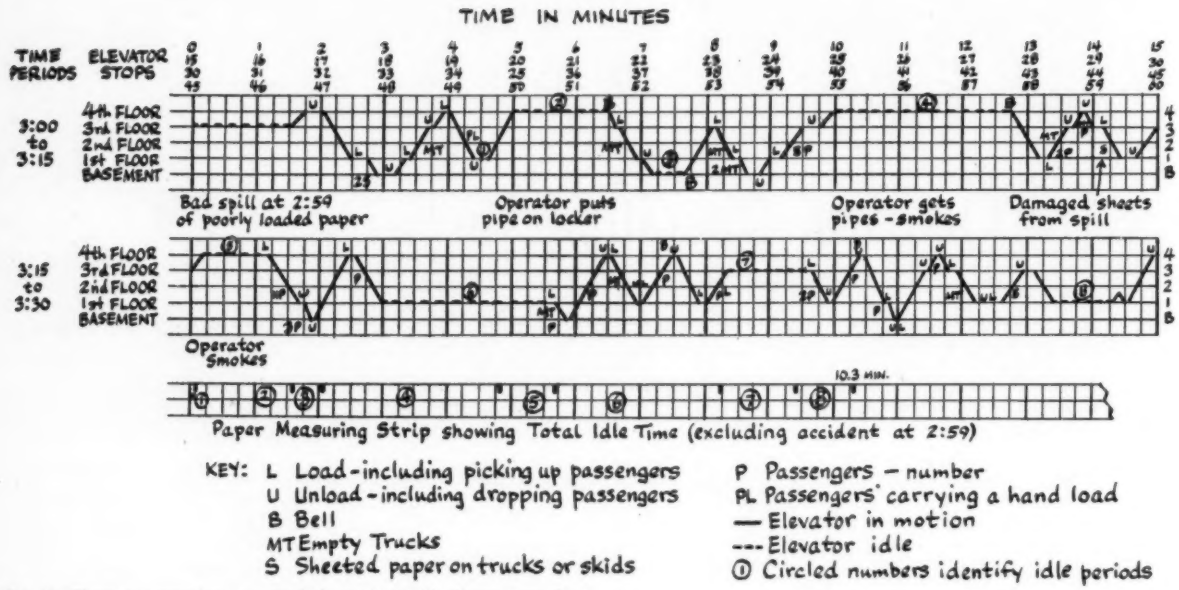

TIME IN MINUTES
TIME PERIODS
ELEVATOR STOPS
3:00 to 3:15
3:15 to 3:30
4th FLOOR
3rd FLOOR
2nd FLOOR
1st FLOOR
BASEMENT
Bad spill at 2:59 of poorly loaded paper
Operator puts pipe on locker
Operator gets pipes - smokes
Damaged sheets from spill
Operator Smokes
10.3 MIN.
Paper Measuring Strip showing Total Idle Time (excluding accident at 2:59)
KEY: L Load - including picking up passengers
U Unload - including dropping passengers
B Bell
MT Empty Trucks
S Sheeted paper on trucks or skids
P Passengers — number
PL Passengers carrying a hand load
— Elevator in motion
--- Elevator idle
① Circled numbers identify idle periods

Fig. 1—Elevator operation is recorded on this field observation chart

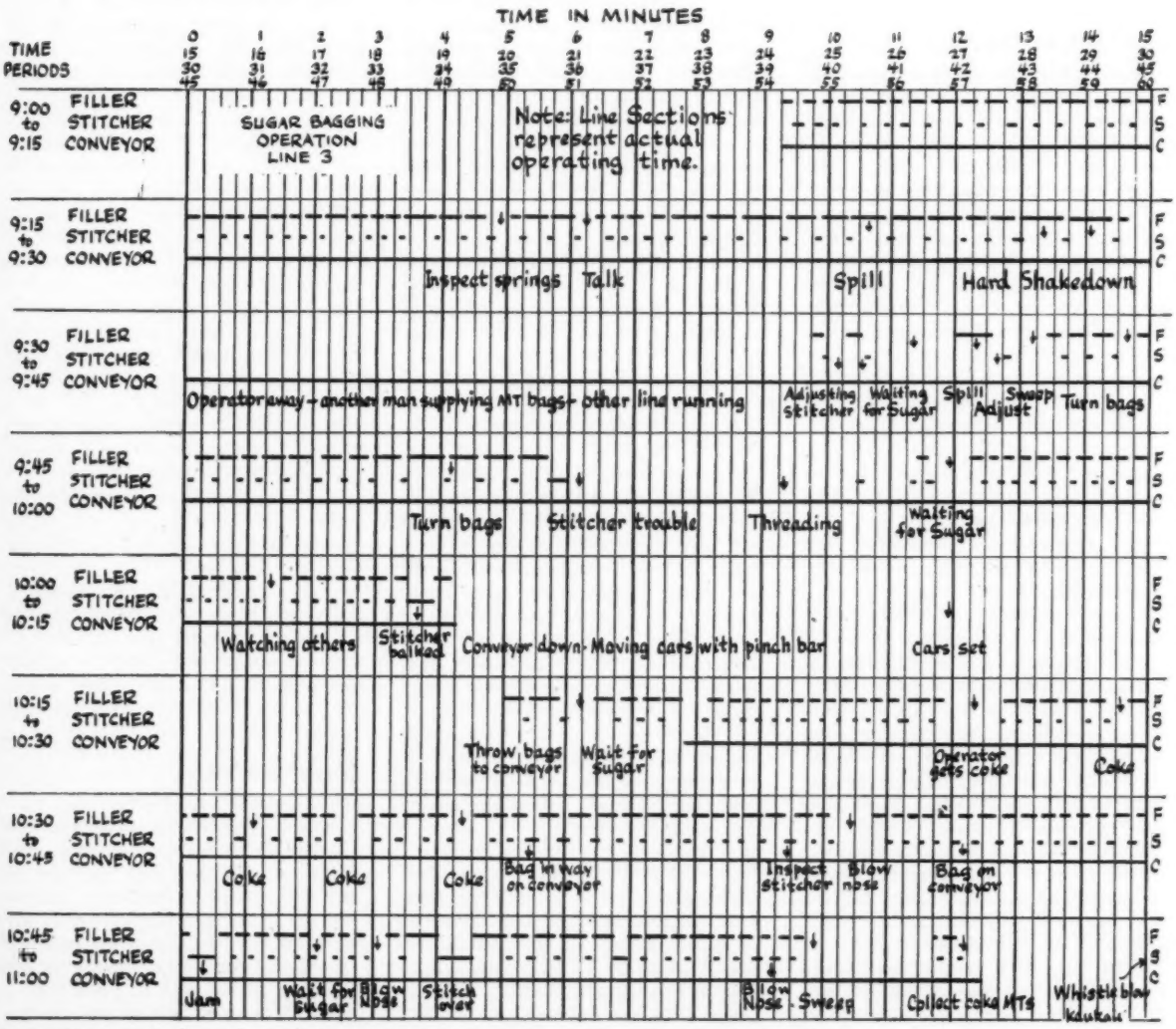


Fig. 3—Simultaneous observations of three interdependent operations are recorded on this field chart

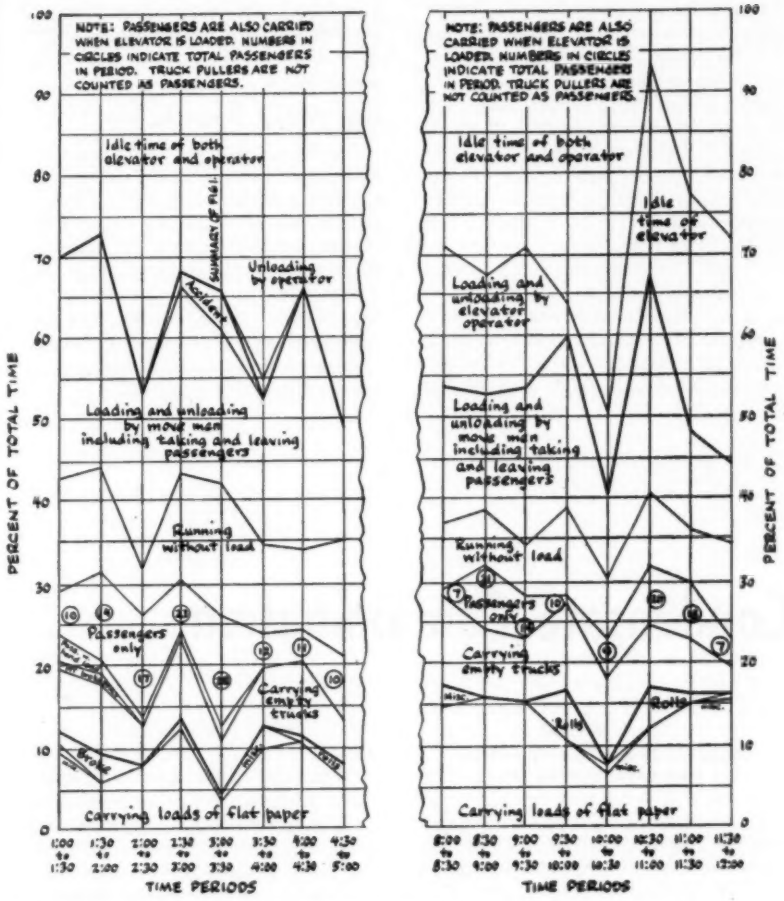

NOTE: PASSENGERS ARE ALSO CARRIED WHEN ELEVATOR IS LOADED. NUMBERS IN CIRCLES INDICATE TOTAL PASSENGERS IN PERIOD. TRUCK PULLERS ARE NOT COUNTED AS PASSENGERS.
Idle time of both elevator and operator
Unloading by operator
Loading and unloading by move men including talking and leaving passengers
Running without load
Passengers only
Carrying empty trucks
Carrying loads of flat paper
PERCENT OF TOTAL TIME
TIME PERIODS
NOTE: PASSENGERS ARE ALSO CARRIED WHEN ELEVATOR IS LOADED. NUMBERS IN CIRCLES INDICATE TOTAL PASSENGERS IN PERIOD. TRUCK PULLERS ARE NOT COUNTED AS PASSENGERS.
Idle time of both elevator and operator
Idle time of elevator
Loading and unloading by elevator operator
Loading and unloading by move men including taking and leaving passengers
Running without load
Passengers only
Carrying empty trucks
Carrying loads of flat paper
PERCENT OF TOTAL TIME
TIME PERIODS

Fig. 2—Summary of elevator study. Finishing room elevator serving: Left—trimmers and sorters; Right—sealers and tieing machines

Analyses of Four-Hour Operations of Electric Lift Truck

	Time (minutes)	Per cent of Truck	
1—Running with a load of material	72.5	30.14	
2—Running with a load of empty skids or containers	10.5	4.37	
3—Running with no load	42.3	17.61	
4—Picking up loads on skids (No. loads 30)	6.0	2.50	
5—Dropping loads on skids (No. loads 32)	4.5	1.88	
6—Picking up loads of empty skids or containers	1.9	.79	
7—Dropping loads of empty skids or containers	1.2	.50	
8—Waiting for elevators	7.7	3.20	†
9—On elevators including handling gates when necessary	35.9	14.94	†
10—Adjusting elevators as a loading or unloading medium	1.6	.67	*†
10a—Waiting for elevator to use as a loading or unloading medium	6.3	2.63	*†
11—Rolling or lifting load by hand (No. loads 4)	6.4	2.67	*†
12—Rolling or lifting, unloading by hand (No. loads 5)	3.8	1:58	*†
13—Getting directions on the spot	2.4	1.00	†
14—Getting directions by phone	2.0	.83	†
15—Looking about for loads	2.1	.88	
16—Waiting for papers, etc.	1.9	.79	*†
17—Waiting for completion of load	2.7	1.13	†
18—Dragging empty skids by hand in depts.	2.4	1.00	*
19—Pushing skids out of aisle	.2	.08	
20—Moving goods for foreman within dept.	.6	.25	*
21—Held up by interferences	8.1	3.37	*†
22—Truck operator relief (drinking, toilet, etc.)	1.7	.71	
		From truck location	
23—Tardiness of truck operator (late in starting)	6.5	2.71	*
		Not timed	
24—To plug in on charging station and quit	3.0	1.25	
25—Operator talking to observer—truck idle	1.9	.79	
26—Operator talking to other employees—truck idle	3.9	1.63	
Total per cent of time about which conceivably something might be done		15.67	*
Total per cent of idle time on meter		32.81	†

(*) Items about which conceivably something might be done
(†) Idle time on meter

was poorly piled. As it was moved off the elevator, the load collapsed and the elevator was detained until the spilled paper could be cleared to the floor. The nine employees were then carried to the fourth floor. The elevator next proceeded to the first floor and took on two skids of sheeted paper and moved them to the basement, then proceeded to the fourth floor where an employee with a hand load was picked up and carried to the first floor.

The elevator was momentarily idle here, then moved up to the smoking floor, and was idle until it received a bell signal at 3:06½ which called it to the third floor. Here it picked up an empty truck and took it to the first floor, and then went on to the basement where it was idle until it received a bell signal—etc. A variety of symbols may be used which will permit a quite detailed history of the movement and usage of the elevator to be recorded.

I have been rather startled to find how many passengers are carried on freight elevators in our industrial plants. It is quite apparent that the smoking period did not apply to all departments and the elevator operator had to do considerable moving during this time. Note that at 3:16, eleven passengers took the elevator down, eight getting off at the first floor and three in the basement. It is easy to see that the fifteen minutes away from work was stretched a couple minutes on this end, and if the period 2:45 to 3:00 were shown, it would indicate some stretch on that end.

Summary Charts

Field charts must be summarized for the use of management. To make such a summary, I have used narrow strips of paper which can be marked with cumulative times by operation, then measured on the top scale. As an example, I have taken the idle time in the 30-minute period from 3:00 to 3:30. The idle time periods, shown in dotted lines, are numbered from 1 to 8. On the sketch of the sample summarizing strip shown, these times are cumulated to the amount of 10.3 minutes. If desirable, the summary could be on a 15 minute basis.

Due to the method there may be some slight difference between the sum of the parts and the total period. A check and a prorate of the differences should be made for each period and the total percentage error in the summary will be negligible. These summary times are then reduced to the percentage of the period and are plotted cumulatively (Figure 2).

The two elevators for which summaries are shown were fairly evenly loaded. Oftentimes elevators will be found to operate with high peak

periods with much idle time between. Some elevators are running empty much more than they should be because the operators cruise up and down like a taxi driver looking for a load instead of waiting for a bell. I have seen heavy cranes in some plants doing this same sort of cruising because there was not a proper signalling system.

By using departmental numbers one may get a complete analysis of what departments use an elevator in a multi-story factory. It is easily seen that the prorate of idle time, where an elevator operator is employed, is a considerable factor and makes the use of self-operating elevators look attractive.

I have at times encountered managements which trusted to mechanical devices where intelligence was essential. One gadget which is sometimes found in use is a meter that tells whether and when a vehicle is in motion. I have my doubts as to whether it is 100 per cent correct even for this simple function, but when management secretly attaches such a gadget and then calls an operator on the carpet on the basis of the record, which at best can tell only "what," with no hint as to "why," I get a bit provoked.

On the other hand, a summary from a field observation chart made by following an industrial truck about a plant (see table) provides a more thorough analysis, not only of the vehicle's operation but of the reasons behind its operation.

Bag Filling Operations

While Figure 1 shows the use of the field observation chart for the study of a single vehicle's operation, Figure 3 records the simultaneous observations of three interdependent operations in the bagging of raw sugar. Here the bag filling machine, stitcher, and conveyor are studied. It was possible, by means of studies in several bagging plants, to determine the most efficient method for use in a central bagging plant.

How to Prevent Condensate Contamination

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▶▶▶ IT IS NOT SO MANY years ago that oil contamination of condensate was a major problem in paper mills. Reciprocating engines were used extensively for driving generators and paper machines, with the oily exhaust steam being condensed in the paper machines and returned to the boilers. Also, reciprocating feed pumps were commonly used, exhausting oily steam to the feed-water heaters. Efforts were made to remove oil from the steam with mechanical separators, and from the paper machine condensate and boiler feedwater with towel filters and by coagulation and filtration. True, because of oil film on the internal surfaces of condensate piping, condensate return line corrosion was not the problem it is today with pure steam. However, there frequently was trouble in the boilers, oily deposits causing overheating and failure of tubes, and saponifiable compounding materials in the oil causing difficulty with foaming and carry-over of boiler water in the steam.

Many changes have taken place. In the modern paper mill, turbogenerators are used for generation of electrical power, paper machines are driven by electric motors or steam turbines instead of reciprocating engines, and centrifugal feed pumps have largely replaced the reciprocating pumps of yesteryear. The turbine exhaust used in the dryers, heat exchangers, heating systems, feedwater heaters, etc., is free from oil, and troubles due to oil have largely disappeared. Nevertheless, there are still some weak points in the systems where troublesome contamination of different character can occur, and in many instances the source of contamination is not immediately apparent, location requiring appreciable time and effort. Because such cases will be of interest to all paper mill engineers and chemists, several recent examples of what can happen will be described.

Rosin-Size Contamination

One day last winter, at a paper mill in Pennsylvania, the water in all three Heine, 140 psig pressure boilers began to foam severely. The engineer did the right thing since he immediately stopped feeding phosphate and alkali chemicals to the boiler water and began to blow down the boilers very heavily. These moves permitted the plant to operate without too much difficulty, but they did not get at the root of the trouble, and naturally set up conditions conducive to scale formation in the boilers.

Analysis of Boiler Water Showing High Concentration of Organic Matter Due to Rosin Contamination of Condensate

	ppm.
Hydroxide (OH)	58
Sulphate (SO_4)	875
Chloride (Cl)	70
Nitrate (NO_3)	125
Silica (SiO_2)	15
Hardness ($CaCO_3$)	50
Total Solids	2160
Organic (by ether extraction)	305

When one of our field engineers arrived at the plant four days later on a routine service visit, he found that the plant engineer had begun to reduce the heavy blowdown, although not yet having located the source of the difficulty and not venturing to resume the feeding of chemicals. Boiler-water samples foamed when shaken, and when freshly drawn, contained material which had the appearance of soap curds. There was no positive evidence of oil contamination of the boiler water, and spot samples of condensate from various sources failed to give a clue as to the source of the contaminant which was producing the difficulty in the boilers.

Our engineer immediately collected samples of feedwater and boiler water for determination of the extent of contamination, and for identification of the material having the appearance of soap curds which presumably was the contaminating material. Quick diagnosis of the problem and location of the source of contamination were essential to insure safe and continuous operation of the boilers.

Analyses of these samples showed the feedwater to contain almost 30 ppm of ether extractable material (acidified sample), and the boiler water to contain more than 300 ppm (Table). The residues from the ether extractions were not oily in nature, but were light in color, hard when cold, and soft when warm. When heated, they gave off an aromatic odor. The physical nature

of the material suggested rosin, and this composition was confirmed chemically.

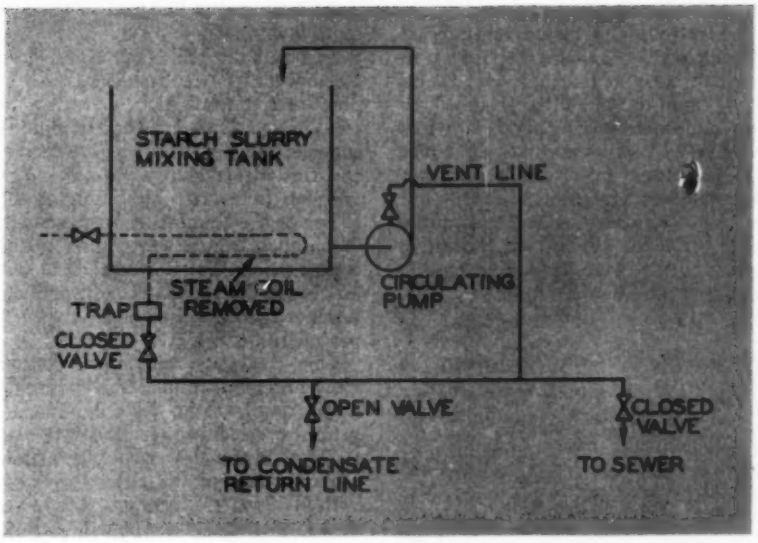
Armed with this information, our service engineer investigated the rosin cooking and storage tanks. Although the steam coil in the size storage tank could not be examined since the tank had just been filled with 15,000 gallons of rosin size, condensate samples from the heating coil showed definite evidence of heavy rosin contamination. The source of contamination was thus definitely located. Repair of the steam coil was not immediately possible, but it was a simple matter to discharge the condensate to waste until the size tank was empty.

Starch-Size Contamination

About two years ago, at a large paper mill in Virginia, the water in the 425 psig boilers suddenly turned black and all alkalinity disappeared. Also, the water showed a tendency to foam. The only clue to the cause of the trouble was the simultaneous appearance of some white suspended material in the feedwater. Naturally, the plant engineers and chemists were considerably perturbed, and since the offending material was evidently organic in character, they immediately started checking condensate from various points to locate the source of the contaminating material. The search was fruitless and when the condition cleared up in a day or two everyone breathed easier.

The feeling of security was of short duration. It was only a day or two until contamination recurred. A considerably worried chief chemist called us for help, and after assuring him that we would get a field engineer on the job, we told him the symptoms resembled those of sugar contamination. The possibility of sugar getting into the boiler feedwater in a paper mill seemed far-fetched, so no immediate search was contemplated for this type of contaminant. Rather, other possibilities were discussed, including inleakage of raw river water contaminated with black liquor, and direct black liquor contamination of condensate. The latter was ruled out, however, since black liquor would increase, rather than decrease, boiler-water alkalinity.

When our field engineer got to the plant he could find no evidence of inleakage of raw river water containing black liquor, and immediately checked the condensate from the various departments of the plant, not finding any to be seriously contaminated. In the meantime, we had considered a number of possible sources of contamination and wired our field engineer to check the rosin cookers for possible leakage of steam coils. He did this at once, but found nothing wrong, and was about to walk out of the size preparation department when he noticed a man dumping sacks of white powder into a large tank. Investigation quickened his interest, since he found the white material to be beater starch, but the plant men accompanying him felt that the starch could not get into the condensate because the steam coil had been removed from the tank.



Piping arrangement which resulted in introduction of starch slurry to condensate return line

Not being satisfied that it was impossible for the starch to get into the condensate, our engineer investigated further and found a peculiar piping arrangement. The starch-slurry circulating pump was vented into a sewer line, one branch of which led to piping on the discharge side of a steam trap which had been taken out of service when the steam coil was removed from the starch dissolving tank (See drawing). From this unused condensate piping the starch slurry flowed into a larger line carrying condensate back to the boiler house.

Testing the white suspended matter in the boiler feedwater with iodine confirmed that the contaminating material was starch, and elimination of contamination was quickly and easily accomplished by simply closing one valve and opening another.

After the source of contamination was discovered, it was found that there were two lines carrying condensate from the paper machine area to the boiler house, and all samples from this area checked at the boiler house had been collected from the uncontaminated line. This accounted for the failure to find any contaminated condensate prior to investigation of the starch dissolving tank. It also should be noted that our original suggestion of sugar contamination was not so far-fetched as it seemed at the time, because beater starch is partially converted with acid, and probably contains glucose and dextrins as well as starch.

Fuel-Oil Contamination

Late in 1948, a paperboard mill in California changed from gas to oil as fuel for the 435-psig, 90,000 pound-per-hour boilers. After approximately two months of operation with the new fuel, oil was detected in the boiler water and in condensate from a condensing turbine. Leaking heating coils in the fuel-oil tanks were responsible, and contamination was halted immediately by wasting condensate from the coils.

In this particular case, the source of condensate contamination was easily and promptly located. Nevertheless, there was considerable concern about how long the oil leakage had been going on and about what damage had been done, or might result later, in the boilers. Since the main danger was tube failures because of formation of oily deposits, and no evidence of distress in the boilers had been noted up to the time of discovery of oil contamination, it was reasonable to expect continued satisfactory operation with the oily condensate being discharged to waste. The recommendations made to hasten removal of oil were to blow down the boilers heavily, and temporarily to maintain relatively high alkalinity in the boiler water. It was also recommended that load on the boilers be kept as light as possible until there was opportunity to take at least one out of service for inspection.

Luckily there was no accident dur-

ing the two months that passed before a boiler could be spared for internal examination. Asphaltic deposit up to one-half inch in thickness was found in the mud drum, and the main blow-off connection was plugged with this material. Visible portions of boiler tubes appeared to be fairly clean, but one water-wall tube was blistered, and as a precautionary measure all tubes were turbined. Prompt and effective action by the plant personnel had prevented what might have been serious boiler damage and plant shutdown.

Waste-Water Contamination

A Michigan paper manufacturing plant uses lake water, treated by sodium-hydrogen base exchange, as make-up for 600 and 165-psig boilers. Phosphate is used in the boilers to take care of the residual calcium in the make-up water, and normally the amount required is relatively small since hardness of the treated water is quite low.

Last summer the plant experienced a temporarily inexplicable increase in phosphate consumption. Testing of condensate and water samples from the concrete clear well where condensate and treated make-up water are mixed gave no immediate indication of the source of the abnormally large amount of hardness which was getting to the boilers. For several weeks there was no change for the better, and periodic searches for the source of the difficulty proved futile.

One day water conditions became more upset than usual, enough so that action could not be delayed. Investigation revealed a lower than usual water level in the clear well and definite contamination of the clear-well water with hard water. Here was the answer to the persistent and finally serious problem. The concrete clear well was cracked. An adjacent sewer carrying backwash water from the raw-water filters, and other waste water, was broken. Result, contamination of the clear-well water with hard waste water only when water level in the clear well dropped below the level of the hard water outside.

Conclusion

As has been demonstrated, the dangerous blow of condensate contamination can strike suddenly and unexpectedly. No engineer can assume that it will not happen in his plant nor can he always immediately put his finger on the location when it does occur. He can, however, minimize the possibility of difficulty by periodically checking potential trouble spots such as size-tank heating coils, digester heat exchangers, fuel-oil heaters, condensers, etc. Such vigilance should pay dividends, since a major boiler shutdown, and quite possibly concomitant loss of production, can be inordinately expensive.

Good Lighting Increases Efficiency

DR. W. SCHWEISHEIMER

▶▶▶ GOOD ILLUMINATION is not only an urgent need for the well-being and well-feeling of all workers and employees; it means also increased production and raised efficiency. The trend to progressive use of bright illumination and proper bright paint colors for increased safety and efficiency has been going on for many years in the paper manufacturing industry.

Advantages to industry of good illumination are better workmanship, increased production, decreased costs, greater ease of seeing, less eyestrain, improved morale, better housekeeping and greater safety.

The Illuminating Engineering Society has worked out acceptable standards for levels of illumination. Their lists show the recommended minimum standards of illumination for paper manufacturing. The minimum figure for paper machine rooms is 20 foot-candles.

Illumination is determined by measuring the number of foot-candles 30 inches above the floor. Sometimes a combination of general illumination and supplementary light at the point of work itself is needed. The device by which measurement of light can be made is known as a foot-candle meter.

The design and installation of combined illumination must provide a sufficient amount of light. Its other purpose is to provide, also, the proper direction of light diffusion and average eye protection. As far as possible, combined illumination should eliminate direct and reflected glare as well as objectionable shadows.

Proper arrangement of lighting facilities and strong illumination are factors which help greatly in avoiding eyestrain. Improper lighting shortens the duration of normal seeing. The same holds true for flickering light. Sunlight and artificial light glaring into the eyes, or reflected from such bright surfaces as glossy paper and tabletops and walls, are harmful to the eyes.

Today, more men of advanced age are employed in industry. These older workers will be more efficient if good illumination is granted them. Eyes which grow older need more light for accurate seeing. This is a natural process, connected with changes within the eyes. Strong illumination is particularly needed for somewhat aged eyes.

Deposits of dust and soot on unpainted or long-neglected walls and ceilings gradually darkens them even though they have previously been a gleaming white. The entering daylight of the artificial light of the room cannot be adequately reflected, and the room looks dark and gloomy. In tests carried out by Du Pont color technicians and Philadelphia Electric Co., various sections of a workroom were repainted in high light-reflective colors in order to increase the efficiency of the illumination. The white ceiling and the white side walls of the room had lost much of their original whiteness and a good deal of their reflection value. The floor had been dark maroon, and the equipment of the workroom was dark colored. All in all, the co-efficient of light utilization in this workroom had been no more than 27 per cent of the normal.

In the tests mentioned, the ceiling was refinished with light cream paint, and by this simple procedure alone the co-efficient of light utilization could be raised from 27 to 35 per cent. Then, in successive steps, first the side walls were refinished with a neutral green paint, the dark tables and chairs were replaced with light furniture, and finally, the dark maroon floor was recoated with white floor paint stippled with spruce brown.

By this planned use of all reflecting surfaces, and particularly the floor, the co-efficient of light utilization was increased to 55 per cent, an improvement of a little more than 100 per cent over the original arrangement. This was achieved without installing any additional lighting equipment.

Paper and Paperboard Making

HARRY WILLIAMSON

Foreword

▸▸▸ OVER TWENTY YEARS ago THE PAPER INDUSTRY published a series of articles by Harry Williamson entitled "Lessons in Paper Making." Prepared as part of a course to teach practical papermaking, this series of articles dealt mainly with the principles and practice involved in making paper on the fourdrinier machine. The widespread usefulness of "Lessons in Paper Making" (reprinted in booklet form) is indicated by a demand that has continued strong up to the present time.

Ever since publication of the original series, the author has been urged repeatedly to write a similar series of articles on cylinder machine operations. However, rather than limit himself to the cylinder machine, Mr. Williamson decided to write a complete book on paper and board manufacture covering all phases of stock preparation and sheet formation, including the fundamental information given in "Lessons in Paper Making." By so doing, he is fulfilling a lifelong ambition to translate nearly fifty years of practical experience into a book that will be useful to the practical papermaker, technologist, and executive. The outstanding quality of Mr. Williamson's writings is the clarity of expression which enables quick visualization of points under discussion. He not only tells how operations are performed and how equipment operates, but he explains the reasons why. His book will help to bridge the gap between the art and the science of papermaking. Selected chapters will be published serially in THE PAPER INDUSTRY prior to publication of the book by Fritz Publications, Inc.

The son of a papermaker, Harry Williamson has been exposed to a papermaking environment since his youth. At the age of 12 he began an eight-year apprenticeship at Lancashire, England, which trained him as a qualified journeyman papermaker. In 1912, he went to Canada as a backtender to help start the first newsprint machine at Price Brothers & Co., Kenogami, Quebec. After service in World War I with the Royal Newfoundland Regiment, he returned to Grand Falls, Newfoundland, where he operated a newsprint machine. In 1921, he was hired as a machine tender at the Northwest Paper Co., Cloquet, Minn., at a time when that mill was changing from newsprint to fine papers. In 1923, as a machine tender and tour boss, he helped start up the Bastrop Pulp & Paper Co., after which, in 1924, he was employed as tour boss in the startup of the Brown Paper Co., in Monroe, La. From 1925-30 he was employed by Champion Fibre Co., Canton, N. C., as assistant superintendent, then as superintendent. The years 1931-33 were spent as assistant to the manager of the Nekoosa-Edwards Paper Co. It was during the period of 1925-30, however, while employed by the Champion Fibre Co., that Mr. Williamson wrote "Lessons in Paper Making" as part of a vocational education program conducted by that company for its employees.

In 1933 Mr. Williamson went into business as a consultant. He developed his cycling pressure jordan method of stock preparation which he subsequently installed in 11 large board mills for such companies as Michigan Carton Co., Gardner Richardson Co., Robert Gair Co., United Paper Board Co., and Ohio Box Board Co. Prior to World War II, he owned and operated his own mill, but since the war has been employed solely as a consultant and builder. He also has handled the purchase of mills for clients and the establishment of operating and management procedures.

Harry Williamson has written this book, based on his own experience, as a contribution to the industry from which he has gained his livelihood during the past half century. Realizing, however, that there are many divergent views on the many individual phases of making paper, he invites criticisms, questions and comments. Wherever permissible, these comments, together with Mr. Williamson's answers, will be published either with or without identification of the individuals concerned.

Part I . . . Hydration

The words hydration, freeness, slow stock, long stock, short stock, are the most abused and loosely interpreted words in the nomenclature of the papermaking industry. This statement applies in varying degree to the manufacture and sales of paper, and the designing, building and selling of stock preparation and papermaking machinery directly concerned with the formation and drying of paper.

All of the operations of the wet end or forming

area of the paper or paperboard machine, are designed to be ADJUSTABLE by the skilled papermaker to REGULATE the TIME RATE of water drainage from the mixed volume while forming the fibers into a sheet of paper. Even the fixed fact of the size of the mesh of the woven wire, through which the draining water MUST pass in order to form the sheet, may be changed in TIME EFFECT by dropping tube rolls from contact with the traveling wire mesh, or by the adjustment of the length and speed of the shake stroke device.

The wet end, where the fibers are formed into a continuous sheet of paper, is the most IMPORTANT MECHANICAL UNIT of the whole paper mill operations. Before the invention of the wet end which enables us to make a CONTINUOUS sheet of paper, we had only handmade paper in individual sheets.

In factual effect, all subsequent operations in any given paper mill are arranged for and *can only produce* in proportion to the OPERATING EFFICIENCY of the wet end.

In turn: The wet end of the paper machine is ENTIRELY governed by the operations or stock preparation in the beater room. Change in the AMOUNT OR DEGREE, either hydration or cutting, given the stock under the general term preparation, can, in formation effect, NULLIFY the EFFECTIVE adjustment of the TOTAL mechanical devices available at the wet end of the most modern paper or paperboard machine.

Example: A furnish of 80 per cent bleached sulphite and 20 per cent bleached soda pulp; long and short wood fibers BEATEN and JORDANED to produce all the required values of a standard bond paper and run at a speed of 600 fpm on the paper machine. Deliver the SAME furnish UNBEATEN OR JORDANED; just the bundles of fibers separated into individual fibers, to run at the SAME machine speed and make the same REAM weight of paper and the CUMULATIVE EFFECT of the adjustment of ALL the mechanical devices provided at the wet end of the most modern paper machine would FAIL to even FORM the sheet properly.

By *slowing* the machine down about 30 per cent of the running speed and curtailing production, FORMATION could be effected BUT most of the desired and salable values required in the bond sheet would NOT BE PRESENT.

From the wide extreme of the example quoted above, the amount and degree of stock preparation may be *arranged* to stay within the operable limits, minimum and maximum, of the mechanical devices of the paper machine formation area—the wet end.

The difference between arranging for and ACTUALLY CONTROLLING this amount, kind, and degree of the multiple functions of beating, gathered together under the common designation of stock preparation, is the MOST IMPORTANT problem in papermaking.

ANY CHANGE in the VALUE of the stock preparation will have a resultant effect on the TIME RATE of formation. The rate at which the water, used solely as a carrying medium to maintain the fibers in SUSPENSION UNTIL they are woven together, drains through the wire mesh WILL change as the degree of hydration developed ON the fibers or the physical dimensions OF the fibers are changed. The first is developed by the IMPACT RUBBING BLOWS FORCE OF BEATING, the second by a SHEAR CUTTING FORCE of any of the UNITS used in either beating or jordaning, or the use of any form of stock preparation mechanical unit. In its most common and ORIGINAL usage the JORDAN type unit does the CUTTING.

So long as such change remains within the operable limits of the mechanical devices provided on the paper machine, such change will not result in loss by broke or faulty paper PROVIDING the machine tender is sufficiently experienced and alert to NOTE the APPROACHING effect of such change and adjust his wet end devices accordingly.

Facts, statistics, tables, graphs and charts fed to us in large doses are like medicine prescribed for us by a competent doctor—"good for us but difficult and monotonous to take." Quite often, by the use of analogy we can make more sense and get a better understanding with less effort. When the stock preparation is just ARRANGED FOR and NOT controlled, the machine tender is comparable to the driver of an automobile traveling over a road full of S curves with the visibility none too good and two-way traffic. By sitting up to the wheel, keeping his left foot handy on the brake pedal and a delicate touch with his right foot on the accelerator he arrives home safely at the end of his drive but he is tired and NERVOUS. When every phase of stock preparation is carefully controlled, the machine tender is in the same happy position as the driver of a car on the super highway out of Pittsburgh—one hundred miles of one-way traffic highway without a side road or dangerous curve. With clear visibility he can drive with his left foot any old place except on the brake and a heavy relaxed foot on the accelerator. He also arrives home safely *but* he is neither nervous nor tired; he is HAPPY IN ACCOMPLISHMENT.

How often have you experienced a day like that, Mr. Machine Tender? How often have you worked 18 hours a day straightening things out, Mr. Superintendent? By the way, I forgot to mention. If the lad driving the S curved road is either inexperienced or reckless, he just cracks up and the overhead costs jump up. He doesn't have to be very experienced on the straight one-way traffic road and he can't be very reckless because there is so very little for him to do.

Recognizing the wet end of the paper machine as the most important mechanical unit in the paper mill and the BEATER ROOM OPERATIONS ENTIRELY GOVERNING THE EFFICIENCY OF THE WET END led to the use of a slogan that leads to MISUNDERSTANDING AND MISINTERPRETATION. That slogan with which we are all familiar is, "Your paper is MADE in the BEATER." Time and circumstances change. When the Hollander beater was working on RAG stock and performing multiple functions simultaneously and no other stock preparation unit of any kind followed the beater, that statement was and, under the same conditions, still would be, literally true.

For the serious study of papermaking, that beater's slogan should be changed from "your paper is made in the beater" to "your paper is made in the beating." There is a very wide difference.

Paper of very fine quality was made for 1700 years BEFORE the beater, as such, came into being, and in our study of the true meaning of the word hydration as pertaining to papermaking we must get back to first principles.

In the earliest known papermaking, the principal fibers used from the total fibers of the seed hair family now known were flax (later linen) and hemp. Hundreds of years later we have evidence of the first sheet of paper made from cotton. Cotton is now the most commonly used ALL PURPOSE member of the seed hair family and is still largely used in the form of rags and cotton linters for the very best grades of paper.

In this study we are concerned ONLY with the characteristics of these fibers in their natural state of growth pertaining to papermaking because it is the possession of these characteristics which made them so valuable in the making of paper before machinery was invented for that purpose.

Fibers of the seed hair family have fibrils or small hairs of fibers growing and projecting from the parent body of the fiber. In the length of the individual fibers the cotton fiber shows a twisted reticular growth; (this natural characteristic also lends itself so readily to the spinning of cotton for cotton thread), the linen fibers are rounded and polygonal and intermittently, throughout the length of the fiber, show thickenings resembling knots or joints. (In the straw group of fibers such knots or joints, greatly exaggerated, are visible to the eye without the use of a microscope.) The hemp fiber is more nearly like the flax fiber in its natural state and shows knots and joints in the longitudinal growth.

All of these fibers possess one other characteristic very important in this study of the first principles in the manufacture of paper—they will all split easily in LONGITUDINAL STRUCTURE under the impact force of a striking blow.

The linen and hemp fibers will also separate at the TRANSVERSE knots or joints relatively easily under the same kind of applied force. The cotton, because of its twisting reticular growth, is less stiff, less harsh, more yielding to the force of the striking blow and, therefore, does not break up so readily in transverse section.

As these fibers of the seed hair family break apart transversely they *all* show another characteristic favorable to forming the fibers into a sheet of paper, which probably had much to do with the evolution of their use as raw material for making paper by the early papermakers.

The hemp fiber shows very fine hair fiber at the point of rupture; linen and cotton show frayed fibrillae at the point of rupture. (Note: Linen is flax spun into thread and becomes linen thread. The word linen is used separately from the parent fiber flax because through the years we have adopted the name linen papers for so many grades of fine papers.)

The seed hair family fibers, members of which were used to make the first known paper and the major source of raw material for papermaking for 1800 years and still the best raw material for high quality long life paper, will split longitudinally and break up transversely under the impact force of a striking blow. In addition, these fibers possess fibrils of fine hairs in their natural state or form fibrillae as they break apart.

Such reduction of the seed hair family fibers can be accomplished with NO LIQUID WATER PRESENT. In our modern era we do it every day in the gigantic textile industry. The breaker card is a machine used to cut fiber, specifically jute, into short lengths (about 10 inches) and subject it to a preliminary carding and cleaning and paralleling in the finishing card. The carding machine is a device for disentangling and arranging the fibers of cotton, wool, flax, etc.

The operation of the modern carding machine is worthy of the most serious consideration by the student of papermaking. Whole batteries of them can be seen in operation daily in any modern cotton mill. Essentially comprised of two rolls covered with carding cloth, the larger roll is about the diameter of a beater roll while the smaller roll is about one-third of that diameter.

The cotton, in BUNDULAR MASS, is steadily fed against the carding face of the rapidly revolving larger roll. The carding cloth, composed of millions of short, semiflexible, densely packed wires, combs out the individual fibers and carries them around to meet the smaller roll. This smaller roll, covered with a still more densely packed wire carding cloth, is set against the face of the revolving larger roll to micrometer measured contact.

This small roll then combs the individual fibers from the carding cloth-covered face of the larger roll and delivers a continuous gossamer-like web of interlocking fibers as a homogeneous sheet. This gossamer web, up to 60 inches wide, is gathered into the form of a rope by the operator and fed through a circular orifice into a slowly revolving can. By this mechanical means a loosely formed, loosely coiled rope of cotton is formed from the gossamer web and is ready for the next operation.

From BUNDULAR MASS to continuous GOSSAMER WEB to loosely coiled ROPE—all accomplished WITHOUT USING WATER either as an aid to reduction of the fibers or as a carrying medium to form the fibers into a continuous sheet web.

The simile goes even further. The web of cotton delivered from the carding machine is, in formed appearance, very similar to the web of facial and hygienic tissue made by papermaking methods and delivered from the dryer of the Yankee-type paper machine. With the web of cotton there has been no beating in the presence of water either to effect REDUCTION or develop HYDRATION. There has been a very fine tooth combing out of the fibers and fibrils. Formation is effected by the physical interlocking of the fibers only. The web of papermaking fibers delivered from the paper machine has been formed from fibers which have been BRUSHED OUT by light beating.

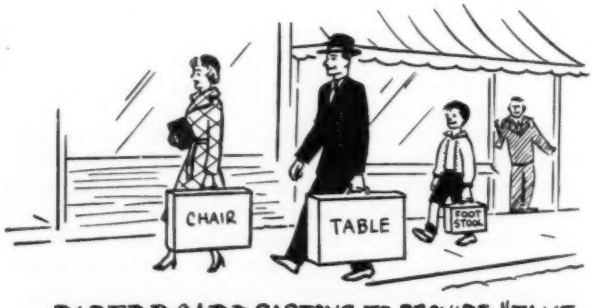
[Follow Mr. Williamson's series of articles in THE PAPER INDUSTRY . . . Part I will be continued next month.]

PAPER SKETCHES

ONE OF THE WORLD'S LARGEST COLLECTIONS OF ANCIENT PAPER WAS ACCIDENTALLY UNEARTHED ABOUT 1900 WHEN A TAOIST MONK CLEANED AWAY DEBRIS IN A CAVE IN TURKESTAN TO RESTORE AN ABANDONED BUDDHIST SHRINE. THE PAPER USED IN THE 15,000 BOOKS AND ROLLS FOUND THERE WAS MADE BETWEEN 400-1000 A.D.

AS EARLY AS 1145 A.D., THE SARACENS OF FEZ, NORTH AFRICA, PAPERED THE WALLS OF THE MOSQUE OF KARAVIJIN TO CONCEAL FROM THE EYES OF AN INVADING ARMY THE RICH SCULPTURE AND PAINTINGS ON THE WALLS. PAPER WAS FIRST APPLIED... THEN PLASTER.

IN THE TIME OF QUEEN ELIZABETH OF ENGLAND, COMPLAINTS WERE MADE THAT THE WOMEN EMPLOYED BY SPELLMAN, THE PAPERMAKER, TO COLLECT RAGS HOUSE TO HOUSE, WERE USING THIS OCCUPATION AS A "FRONT" FOR BEGGING AND HOUSE-BREAKING.



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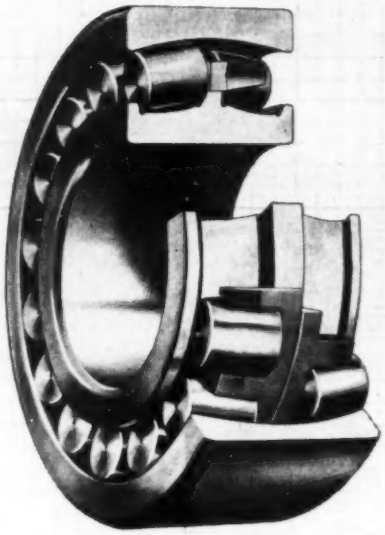

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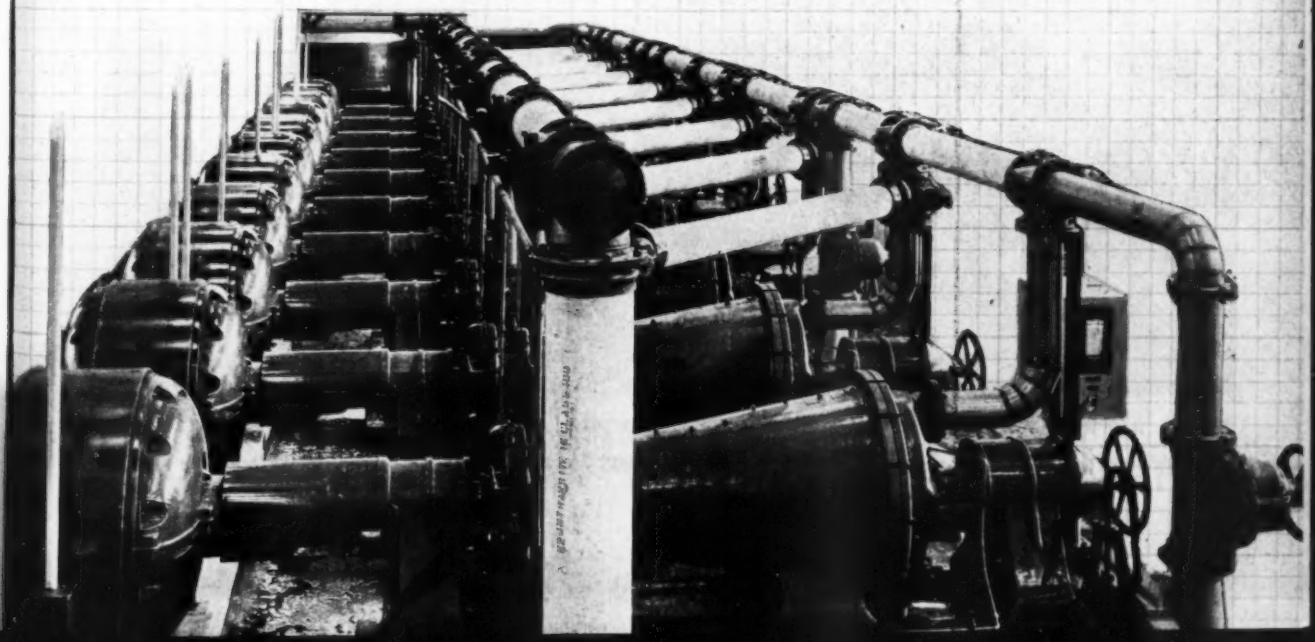

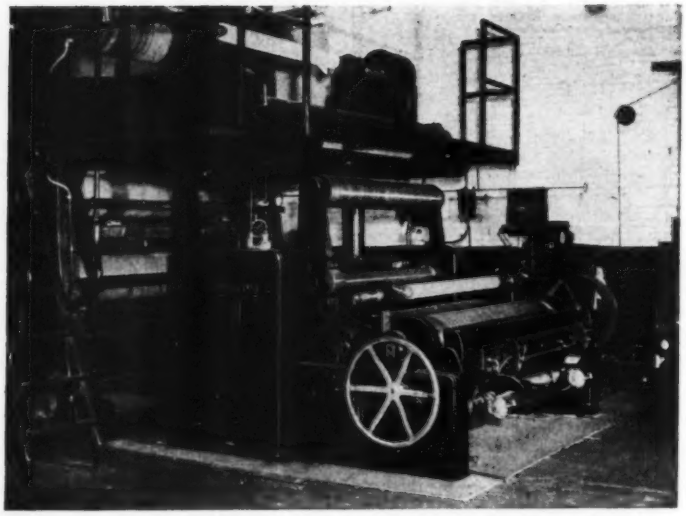

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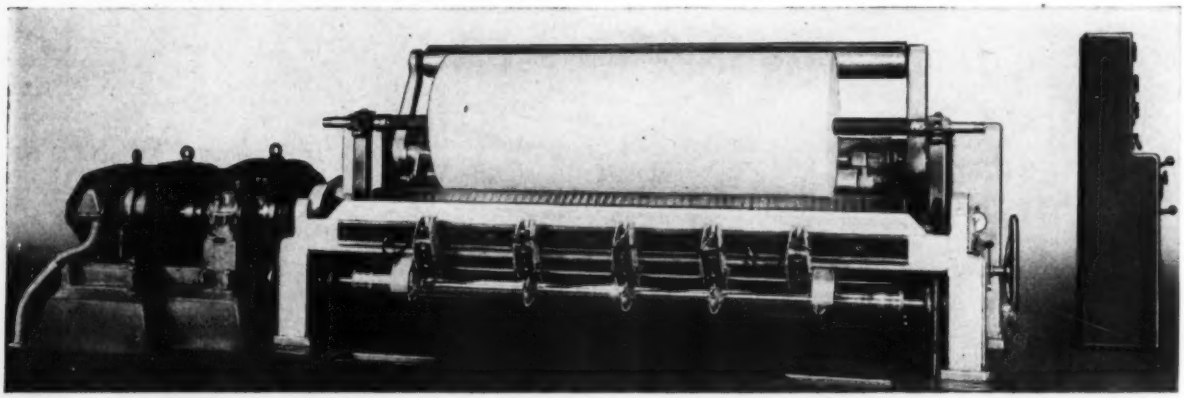

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The Paper Industry Association News

TAPPI Meeting . . .

(Continued from page 1410)

Formulation and Properties of Laminating Varnishes, by C. B. Bennett, Catalin Corp. of America, New York, N. Y.

Studies of Dielectric Properties of Chemical Pulps. III. Dielectric Properties of Cellulose, by Charles R. Calkins, Institute of Paper Chemistry, Appleton, Wis.

Alkaline Pulping

Henry Vranian, The Chesapeake Corp., of Virginia, West Point, Va., presiding. Kenneth D. Running, Halifax Paper Co., Roanoke Rapids, N.C., Recorder.

The Pulping of Scrub Oak by the Kraft Process, by R. L. Harvin, C. W. Rothrock, Jr., and W. J. Nolan, University of Florida, Gainesville, Fla., and G. B. Hills, Jr., St. Joe Paper Co., Port St. Joe, Fla.

Chemical Cleaning of Black Liquor Evaporators, by H. H. Walther, Dowell, Inc., Richmond, Va.

The Operation of the Multiroll Beater-Refiner in a Southern Kraft Mill, by Milton R. Roberts, Hudson Pulp and Paper Corp., Palatka, Fla.

The Effect of Roll Load in Beating of Southern Kraft Pulp, by C. S. Walseth and C. J. Geijer, Union Bag & Paper Corp., Savannah, Ga.

The Effect of Kraft Pulp Mill Wastes on Fish Life, by W. B. Van Horn and J. B. Anderson, Institute of Paper Chemistry, Appleton, Wis.

The Synthesis of Some Turpene Carboxylic Esters from Crude Sulphate Turpentine and Other Sources—Their Preliminary Evaluation as Plasticizers, by Torsten Hasselstrom, C. E. Balmer, Miss N. E. Kennedy, and H. W. Coles, Quartermaster Research and Development Dept. of the Army, Philadelphia Quartermaster Depot, Philadelphia, Pa.

Water

C. M. Connor, W. C. Hamilton & Sons, Miquon, Pa., presiding.

Industrial Use of Ground Water, by William F. Guyton, U. S. Geological Survey, Washington, D. C.

Process Water and White Water Filtration with the Automatic Backwash Sand Filter, by F. C. Schad, Hardinge Co., York, Pa.

Control of Condensate Return Line Corrosion, by W. A. Tanzola, W. H. and L. D. Betz, Philadelphia, Pa.

Electrolytic Coagulation, by Paul G. Stephen, Alhydro, Inc., Baltimore, Md.

Flow Instrumentation in the Pulp and Paper Industry, by Victor P. Head and Arthur Patureau, Fischer & Porter Co., Hatboro, Pa.

Coating

J. H. Heuer, St. Regis Paper Co., Deferiet, N.Y., presiding, and Miss L. V. Hans, St. Regis Paper Co., Deferiet, N.Y., Recorder.

Starch and Its Application in Paper Machine Coating, by Ralph W. Kerr, Corn Products Refining Co., Argo, Ill.

Enzyme Conversion and Its Application to Paper Machine Coating, by D. A. Hughes and W. L. Craig, R. T. Vanderbilt Co., New York, N. Y.

A Method of Preparing Water-Resistant Starch Coatings by the Use of Antimony Salts, by Lawrence Gussman, N. M. Frisch, and F. J. Sweeney, Stein, Hall & Co., New York, N. Y.

The Rheology of Paper Coatings, by William R. Willets, Titanium Pigment Corp., New York, N. Y.

Casein Adhesive in Roll Coating, by J. Wilson Smith, R. T. Trelfa, and H. O. Ware, Hercules Powder Co., Wilmington, Del.

The Reverse Roll of Principle of Coating, by Geoffrey Broughton, Lowell Textile Institute, Lowell, Mass., and Lawrence W. Egan and Robert C. Sturken, Frank W. Egan & Co., Bound Brook, N. J.

Microbiological

R. F. DeLong, Marathon Corp., Menasha, Wis., presiding.

The Preparation and Testing of Mold-Resistant Wrapping Papers, by Louis C. Barail, U. S. Testing Co., Hoboken, N. J.

Performance of Paper Machine Wet Felts. Preliminary Microscopic Observations of the Effect of Microorganisms on the Plugging of Felts, by Stanley J. Buckman, Buckman Laboratories, Inc., Memphis, Tenn.

Some Further Observations on Penicillium roqueforti Thom, by John W. Appling, Stanley J. Buckman, and Conan D. Cash, Buckman Laboratories, Inc., Memphis, Tenn.

Further Studies on the Lethal Effect of Drier Roll Temperature Upon Bacteria in Paperboard, by B. F. Shema, Institute of Paper Chemistry, Appleton, Wis.

Slime Acclimatization, by Paul A. Sartoretto, W. A. Cleary Corp., New Brunswick, N. J.

Slime Measurements, by L. A. McKeown, Consultant, Plattsburg, N. Y., and John H. Bardsley, St. Lawrence Paper Mills Co., Ltd., Three Rivers, Ohio.

Coating and Graphic Arts

R. H. Simmons, Government Printing Office, Washington, D.C. and J. H. Heuer, St. Regis Paper Co., Deferiet, N.Y., presiding, and Miss L. V. Hans, Recorder.

The Picking of Paper and Its Relation to Ink Tack, by Andries Voet and Claude F. Geffken, J. M. Huber Corp., New York, N. Y.

New Inks for the Graphic Arts, by George Cramer, Sinclair & Valentine Co., New York, N. Y.

The Evaluation of Coated Paper Surfaces for Printing Ink Absorption, by Andries Voet and John S. Brand, J. M. Huber Corp., New York, N. Y.

Safety Papers—A Review of Theory and Practice, by Francis L. Simons, Crane & Co., Dalton, Mass.

Panel Discussion on Printing of Coated Papers.

Papermaking—Fourdrinier

Noel R. Phillips, Champion Paper & Fibre Co., Canton, N.C., presiding.

A Stain for Use in the Microscopy of Beaten Fibers, by Francis L. Simons, Crane & Co., Dalton, Mass.

Symposium on Paper Machine Slices.

(a) Slices for Rag Content Papers, by Robert W. Pattison, Cellulose Fibre, Inc.

(b) Slices for Lightweight Papers, by F. O. Boylon, Crown Zellerbach Corp.

(c) Slices for Newsprint, by Vernon P. Tipka, News Print Service Bureau.

(d) The Ideal Slice, by S. A. Staege, Black-Clawson Co.

Panel Discussion on Slices. T. J. Barry, Hollingsworth & Whitney Co., Waterville, Me.; H. W. Spencer, Howard Smith Paper Mill Ltd., Cornwall, Ont.; L. P. Thompson, Personal Products Co., Milltown, N. J.; and F. L. Zellers, Chillicothe Paper Co., Chillicothe, Ohio.

Containers

H. T. Barker, Bird & Son, E. Walpole, Mass., presiding.

Symposium on Fiber Shipping Case Performance.

An Unscientific Way to Scientific Help in Packaging, by C. S. Macnair, Acme Steel Co., Chicago, Ill. Discussion by W. J. Balster, Don L. Quinn Co., Chicago, Ill.

Some Aspects of Container Handling in Rail Transportation, by E. J. Dahill, Association of American Railroads, Chicago, Ill.

Quality Control of Corrugated Shipping Cases from a Buyer's Viewpoint, by E. H. Balkema, Colgate-Palmolive-Peet Co., Hoboken, N. J.

Controlling Container Quality, by George Farrah, National Container Corp., Long Island City, N. Y.

Semichemical Pulping

R. M. Drummond, International Paper Co., Glens Falls, N.Y., presiding.

Penetration of Neutral Sulphite Cooking Liquors into Yellow Birch Wood, by V. J. Wirpsa, St. Regis Paper Co., Kalamazoo, Mich. and C. E. Libby, N. Y. State College of Forestry, Syracuse, N. Y.

The Manufacture of Chemigroundwood Pulp from Hardwoods, by C. E. Libby and

F. W. O'Neil, N. Y. State College of Forestry, Syracuse, N. Y.

Effect of Bark in the Neutral Sulphite Semichemical Pulping of Aspen, Hickory, and Slash Pine, by E. L. Keller, Forest Products Laboratory, Madison, Wis.

Production of High-Yield Pulps from Aspen by Mild Treatments with Sodium Hydroxide, by K. J. Brown and J. N. McGovern, Forest Products Laboratory, Madison, Wis.

Groundwood Pulping of Mixtures of Spruce and Aspen, by E. R. Schafer and Axel Hytinen, Forest Products Laboratory, Madison, Wis.

Quality Improvement of Deinked Stock by Centrifugal Separators, by H. P. Bailey, J. J. Forsythe, and J. P. Tomaszewski, International Paper Co., Niagara Falls, N. Y.

Acid Pulping

G. H. McGregor, Minnesota & Ontario Paper Co., International Falls, Minn., presiding.

Relation Between Yield and Properties of Spruce and Aspen Sulphite and Sulphite Semichemical Pulps, by J. N. McGovern, Forest Products Laboratory, Madison, Wis.

Ammonia-Base Sulphite Pulping of Hardwoods, by E. F. Thode and Y. H. Lee, University of Maine, Orono, Me.

Proven Methods of Screening Maximum Quantities of Quality Pulp, by H. F. Schenk, Magnus Metals Corp., Fitchburg, Mass.

Circulation Systems and Sulphite Pulping, by J. M. Wilcox, Electric Steel Foundry, Portland, Ore.

Use of Sulphite Waste Liquor in Cement, by E. W. Scripture, Master Builders Co., Cleveland, Ohio.

Chemical Products

Arthur Pollak, consulting engineer, New York, N.Y., presiding.

Abstracts of some of these TAPPI papers appear in this issue. Other installments will be published.

Salesmen's Association Holds 31st Annual Luncheon

▶▶▶ THE SALESMEN'S Association of the Paper Industry held its annual meeting on February 20 at the Waldorf-Astoria Hotel, and elected Daniel H. Keck, of the Kimberly-Clark Corp., Neenah, Wis., president. William J. Tilden, The Mead Sales Co., Inc., Chicago, was elected western vice president; George Watson, Wheelright Papers, New York City, eastern vice president; Louis A. Ellis, Howard Paper Co., Urbana, O., assistant western vice president; L. Worthington Dodd, Champion Paper & Fibre Co., New York City, assistant eastern vice president, and E. Glen Amos, New York City, secretary-treasurer.

The 31st annual luncheon of the Salesmen's Association—invariably a highlight of the APPA convention in New York—on Tuesday, February 21, in the Grand Ballroom of the Waldorf-Astoria was attended by close to 1,500, inclusive of numerous notables in the industry. On the dais were the officers of the Association, many of the officers and Governors of the APPA and other top industry representatives, many of whom were introduced by retiring president Alan B. Helffrich, who presided.

E. W. Tinker, executive secretary of the APPA, brought greetings from the parent organization in a short address, and said, in part, as follows:

"The pulp and paper industry has, over the past decade, doubled in size. It is now one of the nation's huge industries. Because of its very size it can no longer isolate itself from public issues of national concern. It must determine its views and make them known. Just one instance, as an illustration. The industry has been gravely concerned with moves to change the tariff structure under which the industry has grown. The potential effect upon employment, payrolls and taxes, let alone dividends, was and is a major issue. This does not mean that the pulp and paper industry is opposed to increased international trade. However, the industry's position and its presentations in this matter were based upon the assumption that the Congress of the United States and those in administrative authority would wish to take action only in the light of full information. It is inconceivable to me that it is sound public policy to bring about a multiplicity of instances comparable to the Town of Waltham, which could easily occur if the situation with respect to the paper industry is not judiciously handled."

The principal speaker was Holcombe Parkes, executive vice president of the Apex Film Corp., long to the forefront in public relations work prior to joining the film company a short time ago. Mr. Parkes said that "with Republicans and Democrats agreeing about the road we're on; with a growing recognition that we are near—or at—the 'point of no return,' and with evidence accumulating every day of a great public awakening to the direction of our travel as a nation, it becomes tremendously important that we make every effort to find some answer to the question, 'where do you go from here.'

"There's nothing fundamentally wrong with America. There's nothing fundamentally wrong with the American people. Once aware of what is happening here—once made aware of the truth by you who know so well how to transmit ideas to masses of people—Americans in every walk of life will be aroused and the peddlers of lies about American industry will be given the treatment they deserve.

"As experts in the business of selling, as masters of the art of communications, as moulders of opinion, as thoughtful loyal Americans, let's call a halt to defeatism. Let's determine to give our sons and daughters at least the same chance we had—the same chance of freedom. Let's use our God-given talents to restore the faith of all Americans in its destiny."

50 Years of Progress Theme for 6th National Chemical Exposition

The theme of the Sixth National Chemical Exposition sponsored by the Chicago Section of the American Chemical Society, which will be held in the Chicago Coliseum Sept. 5 through 9, will be "A Half Century of Chemical Progress."

It is expected that exhibitors will carry out the theme, as will all phases of the Exposition, said to be the first exposition of the chemical industry to focus attention on the contributions of chemical science and industry to mankind during a 50-year span.

Supply Dealers Dinner

The 42nd annual dinner and entertainment of the New York Association of Dealers in Paper Mills' Supplies, Inc., in the Grand Ballroom of theWaldorf-Astoria Hotel in New York City on Monday, February 20, was attended by very nearly 800 persons. Among those at the dinner, which is always one of the outstanding social events during Paper Manufacturers' Week in New York, were many paper and pulp mill officials as guests of the various firms in the trade which supply raw materials to the industry.

An excellent dinner was served, after which an especially enjoyable stage show was presented by talented artists recruited from the theatre, radio, television and night clubs. Walter H. Martens, of George W. Millar & Co., Inc., was chairman of the Banquet Committee, assisted by Anthony S. Gaccione, Louis Marcovitz, Miss Shirley Rief, Harris Goldman, John L. Nielsen and Arthur Rosenfeld. Alfred J. Moran, secretary-treasurer of the Association, was chairman of the Journal Committee which produced a souvenir journal as a memento of the affair, aided by Alfred Carrano, James Derrico, Anthony S. Gaccione, Joseph P. Gaccione, Nicholas J. Guariglia, David Lipman, Anthony Nicoletti and Charles Passannante.

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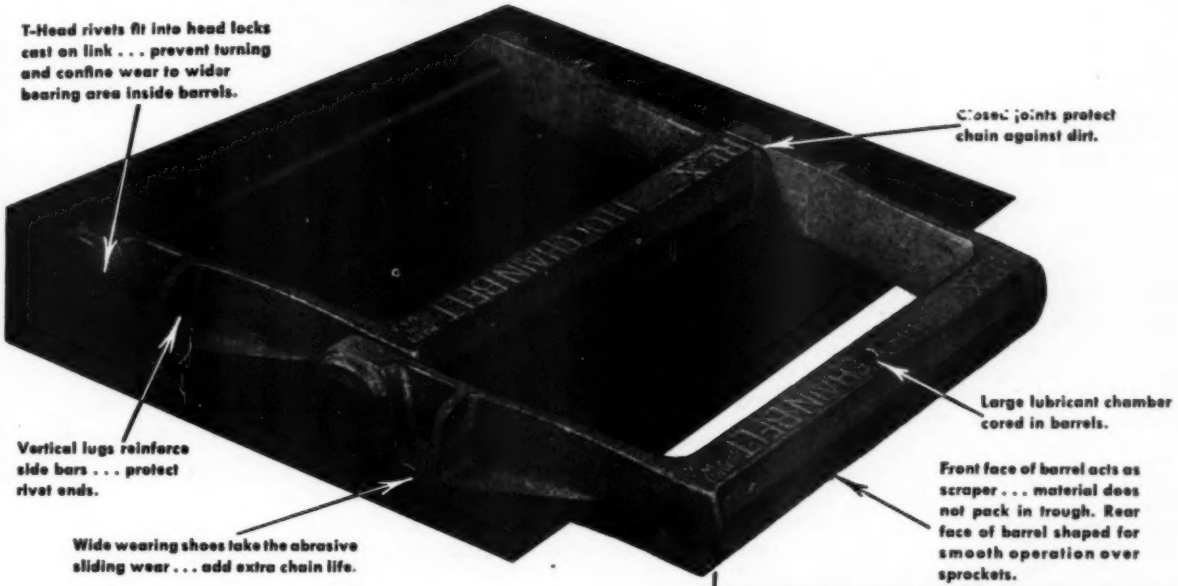
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Divisional Group Meetings

Writing Paper Manufacturers Assn.

W. B. Zimmerman, executive vice president of Howard Paper Mills, Inc., Dayton, Ohio, was re-elected president of the Writing Paper Manufacturers Association at the annual meeting of the Association—recognized as the oldest trade association in the United States—at the Waldorf-Astoria Hotel in New York on February 21. Re-elected as vice presidents were Bruce Crane, Crane & Co., Inc., Dalton, Mass., and A. C. Remley, Nekoosa-Edwards Paper Co., Port Edwards, Wis. Morris C. Dobrow was re-elected executive secretary-treasurer, marking the 35th year he has been with the Association. John F. Darrow was re-elected assistant secretary and Miss Olive F. McGill was re-elected assistant treasurer.

Members elected to the Association's Executive Committee representing the Rag Content Paper Group were: Bruce Crane, Crane & Co., Inc., re-elected chairman of the Rag Content Paper Group; G. H. Gerpheide, Hawthorne Paper Co.; T. M. Gilbert, Gilbert Paper Co.; Hale Holden, Byron Weston Co.; F. E. May, Rising Paper Co.; D. E. Oberweiser, Fox River Paper Corp.; E. C. Reid, American Writing Paper Corp.; A. J. Schierl, Whiting-Plover Paper Co.; and G. E. Williamson, Strathmore Paper Co.

Members elected to the Executive Committee representing the Sulphite Bond Group were: A. C. Remley, Nekoosa-Edwards Paper Co., re-elected chairman of the Sulphite Bond Group; J. G. Conley, Fraser Paper, Ltd.; W. J. Garrity, Minising Paper Co.; W. L. Jennings, West Virginia Pulp & Paper Co.; C. B. Morgan, Eastern Corp.; F. H. Savage, International Paper Co.; H. W. Suter, Jr., Champion Paper & Fibre Co.; R. I. Worrell, Mead Corp.; and J. D. Zink, Hammermill Paper Co.

In addition, the following were elected to the Executive Committee: Norman Harrower, Linton Brothers & Co., representative of the Bristol Board Group; G. E. O'Connor, Mohawk Paper Mills, Inc., representative of the Cover and Text Paper Group, and Bernard Lucas, S. D. Warren Co., representative of the Thin Paper Group.

Speakers at the meeting included Dr. Edwin G. Nourse, former chairman of the President's Council of Economic Advisers; W. B. Zimmerman, president of the Association; Pierre J. Landry, chief of the Forest Products Branch, ECA, Paris, France; Harold T. Martin, Labor Commissioner of Holyoke, Mass., and W. W. Corlett, counsel, and M. C. Dobrow, executive secretary, of the Association. The meeting was attended by over 100 members and guests.

Norman Harrower, Linton Brothers & Co., Fitchburg, Mass., was elected chairman of the Bristol Board Group of the Writing Paper Manufacturers Association at the group's yearly meeting at the Waldorf-Astoria on February 20. He succeeds R. M. Swaney, Franklin Paper Company, Holyoke, Mass. Other members of the Bristol Board Committee elected were A. P. Mitchell, Riegel Paper Corp., vice chairman; J. B. Cowie, Hollingsworth & Whitney Co.; R. H. Morrill, Chemical Paper Manufacturing Co.; and George Watson, Wheelwright Papers, Inc. W. LeRoy Neubrech, chief of the Pulp and Paper Section, Office of Domestic Commerce, Department of Commerce, Washington, D.C., discussed the outlook for the paper industry, and Major Lamar D. Monroe, Office of the Quartermaster General, Washington, spoke on Army requirements for bristols and packaging.

The Cover and Text Paper Group of the Association met on February 22 and elected George E. O'Connor, Mohawk Paper Mills, Inc., chairman of the Group, to succeed D. T. Quirk, of the Peninsular Paper Co., Ypsilanti, Mich. Other members elected to the Cover and Text Paper Committee were C. W. Hansen, Hampden Glazed Paper and Card Co., as vice chairman; R. F. Arnold, Strathmore Paper Co.; G. H. Beckett, Beckett Paper Co.; and D. T. Quirk, Peninsular Paper Co. James L. Ritchie, executive director of the United States Pulp Producers Association, discussed the current wood pulp situation. He pointed out that the economic climate in which the domestic pulp industry operated in 1949 was extremely variable, due primarily to the effects of speculative inventory practices in the non-durable goods industries. As a consequence, the wood pulp industry's performance for the year as a whole failed to match that of 1948. Total pulp production in 1949, he stated, was 6 per cent less than in 1948; market pulp production 12 per cent less; total imports 19 per cent less; total pulp consumption in paper and board production 5 per cent less, and market pulp consumption for paper and board 10 per cent less. It is not expected, he indicated, that the pulp industry will be confronted in 1950 with readjustments at all comparable in scope with those that occurred in 1949.

At the annual meeting of the Thin Paper Group of the Writing Paper Manufacturers Association held on February 23, Bernard Lucas, S. D. Warren Co., Gardiner, Me., was elected chairman, to succeed W. F. Tatum, Smith Paper, Inc. The Thin Paper Group is composed of paper manufacturers who make carbonizing and condenser tissue, cigarette paper and other high grade thin papers.

Speakers at the meeting were J. L. Muller, chief of the Forest Products Branch, Office of International Trade, Department of Commerce; Norman Meese, Pulp and Paper Division, United States Tariff Commission, and Warren B. Bullock, manager of the Import Committee of the American Paper Industry. Mr. Muller discussed the various aspects of international trade with respect to thin papers. Messrs. Meese and Bullock discussed U.S. tariff problems.

Coated and Processed Paper Assn.

The Coated and Processed Paper Association held its annual meeting on February 20 at the Waldorf-Astoria, and elected Spurgeon F. Barndt, Wyomissing Glazed Paper Co., West Reading, Pa., as president for the ensuing year. Robert C. Adams, Marvellum Co., Holyoke, Mass., and B. B. Novasel, Lachman-Novasel Paper Corp., New York City, were elected vice presidents. The following were elected members of th Executive Committee: F. Allen Barr, Holyoke Card & Paper Co., Holyoke, Mass.; Charles H. Hoffman, Hughes & Hoffman, New York, and James G. Campbell, Industrial Paper & Cordage Co., Pawtucket, R. I. Arthur A. Thomas, of Providence, R. I., was re-elected executive director of the Association.

Association of Pulp Consumers

William Beckett, executive vice president of the Beckett Paper Co., Hamilton, Ohio, was re-elected president of the Association of Pulp Consumers, Inc., at a directors' meeting which was convened immediately following the annual meeting of the Association on February 22 at the Waldorf-Astoria Hotel. Robert Evans, director of purchases of Riegel Paper Corp., New York, was again elected Association vice president, and Karl A. Clauson, of New York City, was re-elected secretary-treasurer.

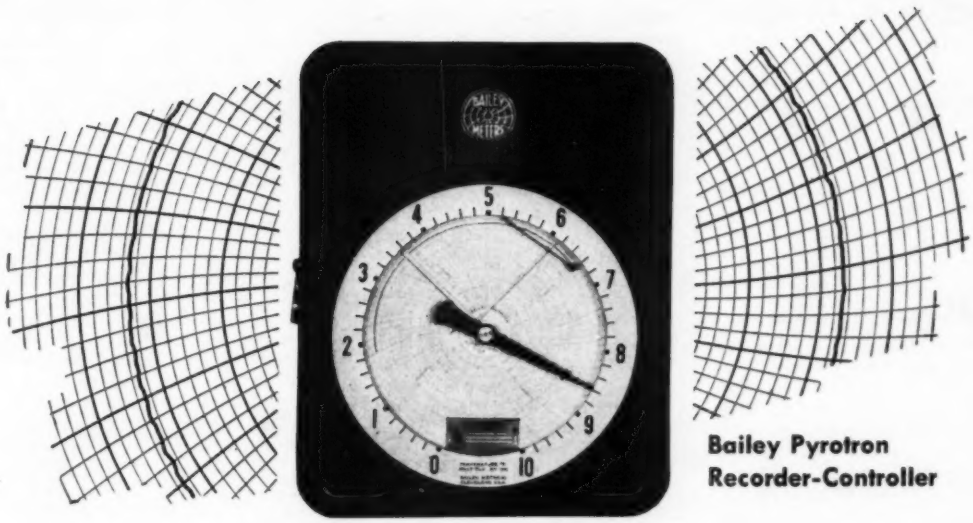
At the annual meeting, President Beckett discussed the increasing importance of the Association's activities to the more than 250 member mills. He emphasized the importance of maintaining an adequate world supply of market pulp. Secretary Clauson presented a review of the paper grade market pulps, illustrated with colored charts, showing the trends during the past thirteen years, as well as the market pulp prospects for 1950. The Association concluded its annual meeting with the election of five new directors, as follows:

W. F. Erisman, Erving Paper Mills, Erving, Mass.; T. F. Murphy, Beach and Arthur Paper Co., New York; D. E. Oberweiser, Fox River Paper Co., Appleton, Wis.; William Race, Sutherland Paper Co., Kalamazoo, Mich., and Gilbert A. Weisberger, Orange Pulp & Paper Mills, Inc., Long Island City, N.Y. These newly-elected directors will serve with the following ten directors whose terms continue through the fiscal year:

Robert H. Evans, Riegel Paper Corp., New York; R. Graham Hagey, Ohio Boxboard Co., Rittman, Ohio; P. Koenig, P. H. Glatfelter Co., Spring Grove, Pa.; George E. O'Connor, Mohawk Paper Mills, Inc., Cohoes, N.Y.; A. F. Owen, Latex Fiber Industries, Inc., Beaver Falls, N.Y.; B. I. Reider, Victoria Paper Mills Co., Fulton, N.Y.; Dwight L. Stocker, Michigan Paper Company of Plainwell, Plainwell, Mich.; Samuel B. Sutphin, Beveridge Paper Co., Indianapolis, Ind.; R. L. Vayo, St. Regis Paper Co., New York, and George E. Williamson, Strathmore Paper Co., West Springfield, Mass.

Paper Napkin Association, Inc.

The Paper Napkin Association, Inc., held its annual meeting at the Waldorf-Astoria on February 21, and elected C. E. O'Connor, Jr., B-F-D Division of Diamond Match Co., chairman of the Executive Committee for the ensuing year. A feature of the meeting was the introduction to the membership of Arlo Wilson, the Association's new full-time secretary, by retiring Executive Committee Chairman W. F. Erisman, Erving Paper Mills, Erving, Mass. Mr. Wilson retains his post on the Association's Executive Committee and was appointed to rep-



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resent his group on the Board of Governors of the American Paper and Pulp Association.

Others elected to the Executive Committee were Floyd R. Graham, Graham Manufacturing Co., Holyoke, Mass.; E. R. Krueger, Paper Art Co., Indianapolis, Ind.; Norman Eber, Winchester Paper Co., Ashvelot, N.H.; R. W. Bertram, Marathon Corp., Rothschild, Wis.; B. T. Hoffmaster, Hoffmaster Paper Co., Oshkosh, Wis., and J. F. Meyer, Groff Paper Co., St. Paul, Minn.

Soda Pulp Manufacturers Association

Peter S. Paine, president of the New York & Pennsylvania Co., New York, was re-elected president of the Soda Pulp Manufacturers Association at the annual meeting held in the Waldorf-Astoria Hotel on February 20. Also elected for another term as vice president was Amor Hollingsworth, Penobscot Chemical Fibre Co., Boston, Mass., while Rufus I. Worrell, Mead Sales Co., Inc., New York, continues as treasurer, and George A. Vogel, also of Mead Sales, was re-named secretary.

United States Pulp Producers Assn.

Five regional directors and ten directors at large were elected at the annual meeting of the United States Pulp Producers Association on February 20 at the Waldorf-Astoria Hotel. The regional directors are Downing P. Brown, Brown Co.—New England; H. S. Oliver, New York & Pennsylvania Co.—Middle Atlantic; Stuart E. Kay, International Paper Co.—South; W. M. Wright, Kimberly-Clark Corp.—Lake States, and L. K. Larson, Weyerhaeuser Timber Co.—West Coast.

Directors at large are R. M. Buckley, Soundview Pulp Co.; Stuart B. Copeland, The Northwest Paper Co.; Willard J. Dixon, St. Regis Paper Co.; Amor Hollingsworth, Penobscot Chemical Fibre Co.; James L. Knipe, Union Bag & Paper Corp.; Reuben R. Robertson, Jr., The Champion Paper & Fibre Co.; W. S. Lucey, Rayonier, Inc., James L. Madden, Hollingsworth & Whitney Co.; Lawson Turcotte, Puget Sound Pulp & Timber Co., and Joseph M. Wafer, West Virginia Pulp & Paper Co.

James L. Ritchie, who was re-named executive director of the Association, asserted that consumers' inventories of market wood pulp are currently below a practical working minimum, and producers' inventories are no longer excessive, but that there are some evidences that current production levels in paper and paperboard may be somewhat in excess of consumption. Mr. Ritchie's report to the members detailed many figures concerning wood pulp production, imports, exports, new supply, consumption and inventories.

Groundwood Paper Manufacturers Assn.

E. K. Doonan, Gould Paper Co., Lyons Falls, N.Y., was elected president of the Groundwood Paper Manufacturers Association at the annual meeting of the Association at the Waldorf-Astoria Hotel on February 20. Mr. Doonan succeeds James G. Conley, Fraser Co. Samuel Pruyn, Finch, Pruyn & Co., Glens Falls, N.Y., was elected eastern vice president, and B. W. McEachron, Northwest Paper Co., Cloquet, Minn., western vice president. These officers together with retiring President Conley, E. G. Murray, St. Regis Paper Co., and P. A. Mahony, International Paper Co., comprise the Board of Governors for the coming year.

Sulphite Paper Manufacturers Assn.

James G. Conley, Fraser Paper Co., Madawaska, Me., was elected chairman of the Sulphite Paper Manufacturers Association at the yearly meeting of that organization on February 20 at the Waldorf-Astoria Hotel, succeeding George Stuhr, International Paper Co. Mr. Stuhr was elected vice chairman of the Unbleached Group, and Donald F. McCall, Racquette River Paper Co., Potsdam, N.Y., was elected vice chairman of the Manila Group. Thomas J. Burke, of New York City, was again named secretary-treasurer.

Principal speaker at the Association's annual meeting was Murray Shields, vice president and economist of the Bank of Manhattan Co., New York, whose topic was "The Business Outlook." Citing numerous reasons why 1950 will prove to be a difficult year, although there is a consensus that the year will compare favorably with 1949 in production and income, Mr. Shields gave four "guideposts for planning for 1950," and provided an additional four points under which he discussed the likelihood of another good business year.

Kraft Paper Association, Inc.

Gilford F. Henderson, Brown Co., and Wayne A. Brown, Crown Zellerbach Corp., were re-elected president and vice president, respectively, of the Kraft Paper Association, Inc., at the yearly meeting of that organization at the Waldorf-Astoria Hotel on February 22. The following also were named to the Association's Executive Committee: W. M. Allin, Southern Advance Bag & Paper Co.; J. B. Cowie, Hollingsworth & Whitney Co.; H. S. Daniels, Union Bag & Paper Corp.; J. R. Diggs, Mosinee Paper Mills Co.; W. J. Dizon, St. Regis Paper Co.; D. G. Driscoll, Sorg Paper Co.; K. O. Elderin, Crossett Paper Mills; L. W. Gould, Gaylord Container Corp.; H. C. Lawless, Gilman Paper Co.; William Mazer, Hudson Pulp & Paper Corp.; S. M. Phelan, Jr., West Virginia Pulp & Paper Co.; W. C. Shorter, Camp Manufacturing Co., and George Stuhr, Southern Kraft Division of the International Paper Co.

Tissue Association, Inc.

The Tissue Association, Inc., held its annual convention at the Waldorf-Astoria Hotel in New York on February 19-21, and elected H. G. Wintgens, Hoberg Paper Mills, Green Bay, Wis., president; C. E. O'Connor, Jr., B-F-D Division, Diamond Match Co., vice president; R. W. Sweet, Sweet Brothers Paper Manufacturing Co., treasurer; Ross A. Fife, secretary, and the following Group officers: Wrapping Group—S. H. Reed, Crystal Tissue Co., chairman, and B. W. Sweet, Sweet Brothers Manufacturing Co., vice chairman; Jumbo Roll Group—George W. Dunn, Dunn Paper Co., chairman, and Ralph W. Burrows, Burrows Paper Co., vice chairman; No. 2 Wrapping Group—J. F. Suter, Rondout Paper Mills, chairman, and J. L. Sullivan, North End Paper Co., vice chairman; Gift Wrapping Group—Joseph M. Katz, Paper Craft Corp., chairman, and Joseph Jaret, BenMont Papers, Inc., vice chairman.

After pointing out that the American paper industry has, since 1922, urged that duty rates be sufficiently high—and only so high—as to give the American manufacturer an equal opportunity with foreign producers in his own domestic markets, R. E. Canfield, of counsel for the American Paper and Pulp Association, speaking before the Tissue Association, urged a similar policy upon all domestic industry.

"Almost without exception," he said, "our industries, essential for defense and desirable for the common welfare of the country, are strong, and need no tariff protection to foster their growth. Thinking of the tariff problem from the original point of view, that to provide for defense and welfare meant fostering the establishment and growth of industry, it would appear that the job has been done; that we could now do without tariffs. But 'to provide' also means to 'assure for the future' and therein, it seems to me, lies the answer to the specific policy question. What, if anything, in the way of duties is needed to assure that our industries essential for defense and our economic welfare remain strong? Viewed in this way, the answer is crystal clear. So long as the American standard of living remains higher than that of the rest of the world—so long as United States money is at a premium over foreign currencies—so long as wages in the United States are higher than elsewhere—United States industry will be at a cost disadvantage with similar foreign industries.

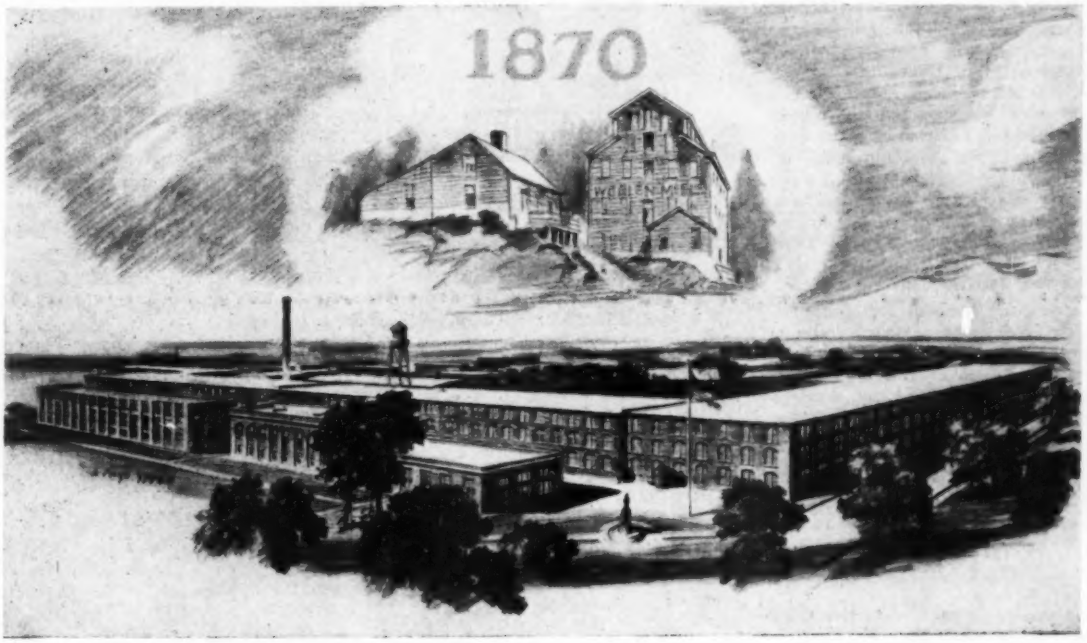
"That, I think, should be the specific policy of Congress—a properly conceived tariff structure to compensate for cost differences and create fair competition between domestic and foreign produced goods. Opportunity to compete on even terms is all that American industry needs to remain strong. Opportunity to compete on even terms is the most that American industry should want and it is certainly the least that should be assured it by Congress."

American Pulpwood Association

With the attendance perhaps the largest ever to attend a meeting of the American Pulpwood Association, the sixteenth annual open meeting of the Association at the Waldorf-Astoria Hotel on February 21 proved very interesting. More than 125 were present to listen to reports on forestry progress by Don Denman, Crown Zellerbach Corp. on the West Coast; George Amidon, Minnesota & Ontario Paper Co., on the Lake States; Dwight Demeritt, Dead River Co., on the Northeast; D. E. Hess, Glatfelter Pulp Wood Co., on the Appalachian area, and Fred Gragg, International Paper Co., on the South.

The reports and discussions which followed indicated not only a growing concern, but increased application of better forestry practices throughout the pulp wood producing regions of the United States.

J. E. McCaffrey, International Paper Co., was elected president of the Association, succeeding Frank Kelly, Northwest Paper Co. M. H. Collet, West Virginia Pulp & Paper Co.; E. O. Ehrhart, New York & Pennsylvania Co., and R. R. Drummond, Oxford Paper Co., were elected vice presidents.



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Glassine and Greaseproof Mfrs. Assn.

At the annual meeting of the Glassine and Greaseproof Manufacturers Association at the Waldorf-Astoria Hotel on February 22, Robert F. Nelson, Rhinelander Paper Co., Rhinelander, Wis., was elected president to succeed Paul Hodgdon, Deerfield Glassine Co., Monroe Bridge, Mass. Elected to the Association's Executive Committee were Folke Becker, Rhinelander Paper Co.; retiring president Hodgdon; Elmer F. Jennings, Thilmany Pulp & Paper Co.,; Paul F. Moore, Westfield River Paper Co.; John L. Riegel, Riegel Paper Corp., and Arthur Schwab, Hammersley Manufacturing Co.

Waxed Paper Institute, Inc.

Three new members of the Executive Committee of the Waxed Paper Institute Inc., were elected at the group's annual meeting at the Waldorf-Astoria Hotel on February 22. Sixty-eight industry members attended to hear an interesting panel discussion on electric eye equipment in the baking field, an address on "Pensions" by Charles Kluss, of Edwin, Shields, Hewitt & Associates, Chicago, and a talk on "Obstacles Facing Waxed Paper Industry Today" by N. W. Postweiler, packaging engineer of the National Biscuit Company, New York.

The Executive Committeemen elected to three-year terms were Karl R. Zimmer, Zimmer Paper Products, Indianapolis, Ind.; Harlan K. Snyder, Central Waxed Paper Co., Chicago, and J. E. Edelstein, Rap-In-Wax Paper Co.

WMC Dedication Will Feature Kalamazoo Supts. & TAPPI Meeting

The April monthly meetings of the Kalamazoo Valley Section of TAPPI and the Michigan Division of the Superintendents Association will be held April 6 in co-operation with Western Michigan College at Kalamazoo, Mich. Morning meetings will be held at Western Michigan College. Sessions at the college will include dedications of the Pulp and Paper School and of equipment donated by the industry. Dr. A. H. Nadelman, head of the school, will be host for an open house in the morning, before the afternoon meetings move to the Hotel Harris.

International Trade Fair for Chicago

The first United States International Trade Fair, originally scheduled to be held in Chicago August 7-19, 1950, has been extended to close August 20, at the request of numerous exhibitors. With headquarters in the Merchandise Mart, exhibits will be displayed at Navy Pier, the Ampitheater, the Arena, and the Coliseum.

Col. John N. Gage, commanding officer of the U.S. Army Quartermaster Depot in Chicago, has been named

managing director of the Fair, called a direct and positive approach to the problem of world trade. Chicago was chosen as the site of the first Fair because the city's natural advantages are expected to create the kind of business atmosphere to encourage buyers and sellers from all over the world to make transactions of mutual profit.

Affiliates Assist Superintendents In Program Planning

Chosen by the Affiliates group of The American Pulp and Paper Mill Superintendents Association are tenmen who are now assisting the various divisions in the preparation of programs and entertainment.

The ten representatives and their respective territories are:

Connecticut—Ray Kilty—A. E. Staley Manufacturing Co.

Miami Valley—Norman Scott—Orr Felt and Blanket Co.

Michigan—C. B. Smith—Noble and Wood Machine Co.

New York-Canadian—H. A. Horstmann—General Dyestuff Corp.

Northeastern—D. M. Hall—Eastwood-Neally Corp.

Northwestern — C. O. Collipp — Simonds Worden White Co.

Pacific Coast—R. B. Morden—Morden Machine Co.

Pennsylvania—New Jersey-Delaware —W. B. Morehouse—Nopco Chemical Co.

Southeastern—Harry Hulmes—Williams-Gray Co.

Southern — Vernon Woodside — Mathieson Chemical Corp.

Approved by the directors of the Association during the convention in Atlantic City, N. J., last June, the cooperative purpose of this endeavor is to make worthwhile use of ideas and service of Affiliates in conducting divisional and national meetings.

Western N.Y. TAPPI Meets at Niagara Falls

Approximately 50 members and guests attended the regular monthly meeting of the Western New York Group of the Technical Association of the Pulp and Paper Industry, held February 8 at the Prospect House in Niagara Falls, N. Y.

Dr. Joseph S. Reichert, DuPont Co., Niagara Falls, introduced the evening's speaker, Burgess Johnson, Life Scout, whose subject was the 40th anniversary of the founding of the Boy Scouts of America.

Following Mr. Reichert's talk, Paul Kuhnel, superintendent, Kimberly-Clark Paper Mill, Niagara Falls, was introduced as moderator of a panel discussion on paper machine felts by Jack Rudolph of the same company.

Members of the panel included Howard Brown, Lockport Felt Co., Newfane, N.Y.; Larry Woodside, Albany Felt Co., Albany, N.Y.; Irving Peters, F. C. Huyck & Sons; and Fred Parkinson, H. Waterbury & Sons, Oriskany, N.Y. After a brief discussion in which each panel member discussed some phase of felt making and felt usage in the paper industry, an open discussion was held.

Coming Events

Mar. 22-23—1950 Annual Meeting of Folding Paper Box Association of America; Carton Competition, at the Drake Hotel, Chicago.

Mar. 27-29—National Paper Trade Association, at Waldorf-Astoria Hotel, New York City.

April 4-8—National Production Exposition, sponsored by Chicago Technical Societies Council, Stevens Hotel, Chicago.

April 24-27—Nineteenth National Packaging Exposition, at Navy Pier, Chicago.

May 11-13—Annual meeting of Pacific Coast Branch, Technical Section of CPPA, at Seattle, Wash., with Pacific Coast Division of TAPPI and the Superintendents Association.

May 29-30—Joint meeting of TAPPI with the Technical Section of CPPA; fundamental research conference at Chateau Frontenac Hotel, Quebec. CPPA Technical Section Summer Meeting to be held at the Chateau Frontenac, May 31-June 2.

June 8-10—Annual meeting of the Superintendents Association, Edgewater Beach Hotel, Chicago.

June 19-22—1950 Chemical Conference, Chemical Institute of Canada, at the Royal York Hotel, Toronto.

June 23-24—Joint Meeting of New England and Maine-New Hampshire sections of TAPPI, at Wentworth-by-the-Sea, N.H. Headquarters will be announced later.

Aug. 7-20—First United States International Trade Fair, to be held in Chicago.

Sept. 5-9—Sixth National Chemical Exposition by Chicago Section of the American Chemical Society, at the Chicago Coliseum.

Sept. 15-16—Annual Fall Meeting of Northwestern Division of the Superintendents Association, at the Schroeder Hotel, Milwaukee, Wis.

Sept. 18-22—Fifth annual Instrument Conference and exhibit, sponsored by Instrument Society of America, Memorial Auditorium, Buffalo, N.Y.

Oct. 2-5—Fifth annual TAPPI Engineering Conference, Netherlands Plaza Hotel, Cincinnati, O.

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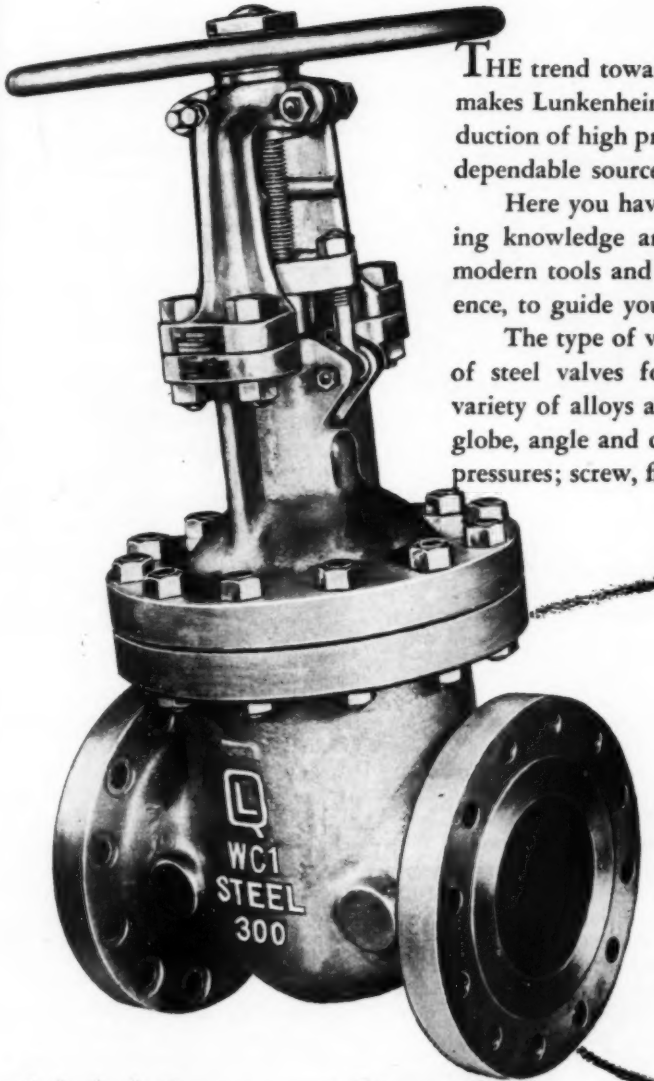

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Here you have top metallurgical research, sound engineering knowledge and design, advanced foundry practice, most modern tools and manufacturing equipment, plus wide experience, to guide you in the selection of your requirements.

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300 lb. CAST STEEL GATE
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Leadership Through Achievement

The Paper Industry Names in the News

Wm. L. Keady

D. C. Everest

Keady to Head Marathon—Everest Will Act as Board Chairman

D. C. Everest, president and general manager of the Marathon Corp., announced on February 28 that effective April 1 William L. Keady, formerly president of United States Gypsum Corp., will be made president and general manager of the Marathon Corp. Mr. Everest will continue in an active capacity as chairman of the board of directors.

Mr. Keady was an Annapolis graduate of the famous "Admiral" class of 1916 and a destroyer veteran of World War I. Following the war, he attended Columbia University where he received an M.S. Degree in Engineering. He turned to private business in 1924 when he joined U. S. Gypsum. He spent twelve years in the production department, the last two years as vice president in charge of manufacturing. From 1936 to 1942, he served as vice president in charge of sales. From 1942 to 1949, he was president. He is a director of City National Bank of Chicago and a director of Montgomery Ward & Co., Inc.

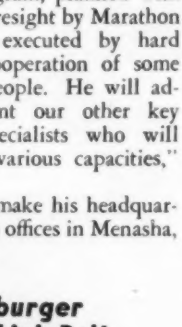
"In Mr. Keady we feel that we have secured the services of one of the nation's outstanding management men. He possesses the experience we need at Marathon, one familiar with multi-plant operation and nation-wide sales organization and with an intimate knowledge of a completely integrated company," Mr. Everest stated.

"In selecting Mr. Keady, we have also assured ourselves of continuity of management in furthering our amazingly complex program, planned with deliberation and foresight by Marathon management and executed by hard work and loyal cooperation of some 6,000 Marathon people. He will admirably complement our other key executives and specialists who will continue in their various capacities," he concluded.

Mr. Keady will make his headquarters at the Marathon offices in Menasha, Wis.

H. W. Regensburger Promoted by Link-Belt

Filling the post of chief engineer of the general engineering department of Link-Belt Co. which was left vacant with the retirement of Harry L. Strube, is H. Walter Regensburger. At the same time, the department has been transferred from Philadelphia to 301 West Pershing Road, Chicago.



H. W. Regensburger

Mr. Regensburger, who was first associated with Link-Belt in 1926, has since served in the estimate-engineering departments of the firm's two Chicago plants, in merchandise sales at the Pershing Road, Chicago, office; as chief engineer at the company's Atlanta plant from 1936 to 1944, and as assistant to the vice president in charge of engineering in the executive offices in Chicago from 1944 to 1947. Since 1947 Mr. Regensburger has been located at the Pershing Road plant, first as divisional engineer and later as assistant chief engineer.

Assisting Mr. Regensburger will be Charles M. Young, Jr., chief developmental engineer; and Harold F. Watson, chief standards engineer. Both Mr. Young and Mr. Watson have been identified with the general engineering department since its organization in Philadelphia in 1946, and both were previously members of the Philadelphia plant engineering department.

Hooker Announces Important Changes

Several major executive changes were made at the recent annual meeting of stockholders and board of directors of Hooker Electrochemical Co., Niagara Falls, N.Y.

The former superintendent of the Niagara Falls plant, Hiram B. Young, was made works manager of the plant. Associated with Hooker since 1935, Mr. Young is a member of the Chlorine Institute, Inc., committee on Container Specifications.

Frank W. Dennis, formerly personnel director and employment manager of the company, was named director of industrial relations for the plants at Niagara Falls, Tacoma, Wash., and subsidiary Hooker-Detrex plants at Tacoma and Ashtabula, O. Mr. Dennis, a member of numerous personnel and industrial associations, first joined Hooker in 1916.

Production advancements included the promotion of the former assistant production superintendent, Leonard F. Bryant to plant superintendent, and the advancement of Walton B. Scott, former assistant technical superintendent, to technical superintendent.

Arthur D. Little Board & Official Changes

At the annual meeting of Arthur J. Little, Inc., Cambridge, Mass., Charles B. Belknap of the Owens-Illinois Glass Co. was elected to the board of directors.

At the same meeting, Howard J. Billings was elected treasurer, to succeed Henry G. Powning. Mr. Billings

will also be in charge of the firm's non-technical internal operations, work formerly the responsibility of T. L. Wheeler, vice president. Mr. Wheeler, associated with Arthur D. Little, Inc., since 1925 and vice president since 1936, will soon retire from the firm under its regular retirement plan.

Dow Promotes Geib

The former midwestern technical representative of the Dowicide division of The Dow Chemical Co., Midland, Mich., Fred R. Geib, has been assigned similar duties on a national basis.

Mr. Geib will work in conjunction with the chemical sales force in the company's sales offices throughout the United States, concerning himself with developmental problems involving bactericides and fungicides which are used in the paper, leather, paint, textile, lumber and oil industries.

Fred R. Geib

J. Arch Clarity

Clarity to Represent E. P. Lawson Co.

As part of the organization of the recently established midwestern sales and service branch of E. P. Lawson Co., located in Chicago, J. Arch Clarity has been appointed a sales representative of the firm.

Mr. Clarity, who is representing Lawson in the sale of paper cutters and bindery equipment in Minnesota, Iowa, western Wisconsin, eastern Nebraska and the Dakotas, is a graduate of the University of Minnesota, and has been formerly associated with Metals Refining Co. and Certified Dry Mat Co.

Managerial Changes at Two Mills— Ward and Wausau

D. B. Smith, formerly president of Ward Paper Co., Merrill, Wis., and the Transco Envelope Co., Chicago, has resigned those positions to become president and general manager of Wausau Paper Mills, Brokaw, Wis.

D. C. Everest, who reorganized the Wausau mill in August, 1948, and has been its president since then, will continue his association with the company as chairman of the board of directors.

When Mr. Smith, who had been associated with Ward since 1938, took up his new position at Wausau, Dr. R. A. Diehm was named executive vice president and general manager of the local Ward plant. Dr. Diehm has been technical director of the Ward Co. for the past three years, coming to the firm after association with the Cuneo Press of Chicago, where he was director of research, and was formerly with the Container Corporation of America and Rohm and Haas Co., Philadelphia.

New secretary and assistant manager of Ward's Merrill plant is Carl Luth, an executive with the company for the past 13 years. Mr. Luth and Dr. Diehm took over their new duties February 1, while Mr. Smith left to assume his work at the Wausau company March 1.

Jim Alden Honored at Surprise Dinner

One hundred and fifty men and women of the graphic arts met at Kalamazoo, Mich., recently for a surprise dinner planned to honor Jim Alden, manager of International Printing Ink's Kalamazoo office on his "40 years of outstanding service to the printing industry."

The evening's toastmaster, Glen S. Graham, vice president, Sutherland Paper Co., Kalamazoo, introduced the speakers, who included Col. Joseph W. Viner, IPI vice president, New York; Ralph A. Hayward and John Wood, president and vice president of KVP, respectively; and Bromwell Ault, vice president of Interchemical Corp., New York. Mr. Alden received a television set presented by F. Jack Jeuck, IPI Chicago vice president, in behalf of the dinner guests.

New Mando Reps for Paper Sales Division

New representatives for the paper sales division of Minnesota and Ontario Paper Co., Minneapolis, are Bruce F. Warner and Edgar Zimmerman.

Both men will be headquartered in the company's Minneapolis offices, Mr. Warner to service newspaper publishers and other newsprint customers, and Mr. Zimmerman to work with groundwood papers users and service paper converters using bleached sulphite and kraft papers.

Mr. Warner first joined Mando in 1921, and has devoted his time continuously to newsprint representation, while Mr. Zimmerman has been employed by Mando continuously since 1936, with a three year leave of absence for military service. His previous work for the company has been performed in the paper company's research laboratories.

Bruce F. Warner

Edgar Zimmerman

H. F. Merritt Promoted—to Direct Solvay Sales Activities

The appointment of Harold F. Merritt as executive vice president in charge of the Solvay Sales Division of Allied Chemical & Dye Corp., New York, became effective recently.

Mr. Merritt has been associated with the Solvay Sales organization, and its predecessor, Wing & Evans, Inc., continuously since 1913, taking a leave of absence only for Army service of two years during World War I. For the past 19 years Mr. Merritt has served as a vice president of Solvay Sales.

H. F. Merritt

W. C. R. Jones

W. C. R. Jones Mill Manager of Columbia Cellulose

The appointment of W. C. R. Jones as mill manager of the Prince Rupert, British Columbia, dissolving pulp plant of Columbia Cellulose Co., Ltd., was announced recently. The new manager, who will assume his duties on May 1, has a background of 20 years in the pulp and paper industry in the United States and abroad.

Mr. Jones's early experience was with the Gatineau Mills of International Paper Co. and with the Wayagamack Division of Consolidated Paper Corp. In 1937 Mr. Jones went to Australia to assist in the design and initial operations of the first chemical wood pulp mill in that country located

at Maryvale, Gippsland. In 1940 he returned to Canada and joined the Howard Smith Paper Mills organization. He has been assistant manager of the Beauharnois Division of that company for the past 7 years.

Mr. Jones has been active for many years in the Technical Section of the Canadian Pulp and Paper Association and is now a member of the Technical Council.

Ollie Messner Becomes Sangamon Vice Pres.

The superintendent and production manager of the Eaton, Ind., mill of Sangamon Paper Mills, Inc., Ollie W. Messner, recently was elected vice president of the company.

Mr. Messner, president of the Superintendents Association in 1948-49, became Sangamon's superintendent in the fall of 1949. (Cf., P.I. and P.W., Nov., 1949.) He had previously been concerned with Robertson Paper Box Co., Montville, Conn.; Low Paper Co., Ridgefield, N.J.; and Empire Box Corp., Stroudsburg, Pa.

Since joining the Sangamon organization, Mr. Messner, who will continue to serve the company as superintendent and production manager, has had the responsibility of completing a rehabilitation program which changed over the plant's production from 9 pt. straw to highgrade boxboard.

The Sangamon company maintains its head office in Chicago, but Mr. Messner will be located at the plant office in Eaton.

Ollie W. Messner

Chas. H. Reese

Reese & Nash Elected Directors of Nepco

Two vacancies on the Nekoosa-Edwards Paper Co., Port Edwards, Wis., board of directors have been filled with the appointments of Neil E. Nash and Charles H. Reese, respectively company vice president and vice president in charge of manufacturing.

Mr. Nash has been associated with Nekoosa-Edwards since 1924, in positions ranging in authority from district sales representative to company vice presidency, which office was assumed in 1947. Mr. Nash has served as a member of the wartime Eastern Pulpwood Advisory Committee of the WPB, and is a member of the Machine Glazed Group of the Sulphite Paper Manufacturers Association, the board of governors of the Sulphite Paper Manufacturers Association and the Committee on Imports for the American Pulpwood Industry.

Mr. Reese first came to Nekoosa-Edwards in 1935 as assistant mill manager, after 21 years service with Hammermill Paper Co., Erie, Pa. Later named manager of manufacturing, Mr. Reese became vice president in charge of manufacturing in 1947. He has been responsible for co-ordination of the manufacturing details and supervision of the production program of the company. Active in many industry associations, Mr. Reese is president of the Superintendents Association, and a member of the Canadian Pulp and Paper Association and TAPPI.

Harry Boldman and *Hugh Smith* have been promoted by Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich. Mr. Boldman, who has served KVP for 37 years, has been promoted from superintendent of the Ink Division to ink making consultant. Mr. Smith, formerly Mr. Boldman's assistant, became superintendent. The promotions are due to the increasing importance of ink making in KVP's expanding printing establishment.

Harry Boldman

Hugh Smith

Executive Changes at Sinclair Company

Several executive appointment and duty changes have been effected at the Holyoke, Mass., offices of the Sinclair Co. Edward L. Epperson, for the past six years company sales service representative in the New England district, has been appointed to the same position in the Ohio-Indiana region. Making his headquarters in Hamilton, Ind., Mr. Epperson will also service paper mills in the area with cylinder recovering.

Fred O. Jones, a recent executive appointee, will serve the company as sales engineer and consultant to paper mills in the midwest.

David H. Sinclair, son of company president Peter S. Sinclair, has assumed charge of all manufacturing, while his brother, Richard M. Sinclair, has become sales manager and assistant to his father. Additionally, David Sinclair is president, and Richard Sinclair treasurer, of Purves Machine Wire Co., a Sinclair affiliate.

Harris-Seybold Promotions

Two men have been promoted to district managerships by Harris-Seybold Co., Cleveland. C. A. Loefgren will be in charge of the firm's western district, while Joseph McConnaughey, Jr., has been chosen to supervise the southern district. They will be responsible for sales and service of Harris lithographic and typographic printing presses, Seybold power paper cutters and related equipment for the graphic arts industry.

C. A. Loefgren

Jos. McConnaughey

With headquarters in Chicago, Mr. Loefgren's authority will encompass Illinois, Wisconsin, Iowa, North and South Dakota, Kansas, Nebraska, Minnesota, and parts of Indiana, Michigan, Montana, Wyoming, and Colorado. Mr. Loefgren was formerly manager of the firm's Chicago branch.

Mr. McConnaughey, who was in charge of Harris-Seybold's Atlanta branch before this appointment, will be concerned with the states of Tennessee, North and South Carolina, Florida, Georgia, Alabama, Mississippi, Louisiana, Arkansas, Oklahoma and Texas.

William F. MacDonald New President of E. F. Houghton

At the annual stockholders meeting held in the Philadelphia offices of E. F. Houghton & Co., recently, William F. MacDonald was elected president of the company, succeeding Major Aaron E. Carpenter.

Mr. MacDonald first became associated with the Houghton company as a cost clerk upon his graduation from the University of Pennsylvania in 1927. He has since served as industrial engi-

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are made with care, skill and pride that they
may profit you by longer, more efficient service

DRYING A TENAX FELT—ONE OF 37 DIFFERENT INSPECTIONS AND QUALITY CONTROLS

From the carding of the virgin wool to the delivery of your Tenax Felt, every step in its making is a point of inspection and quality control. This care exercised at Lockport pays off for you on your paper machines in helping you attain more care-free runs.

The Lockport representative in your territory is fully qualified to advise on all technical questions relating to felts. He is at your service as is our plant and all its people. We invite your inquiries.

LOCKPORT FELT COMPANY • NEWFANE, NEW YORK

neer, credit manager and treasurer, and was named assistant to the president in 1946. For the present, Mr. MacDonald will also hold his treasurer's position.

By-laws of the company provide that Major Carpenter, elected chairman of the board of directors upon his voluntary relinquishment of the presidency, will remain the company's chief executive officer. Major Carpenter, who had held the presidential chair since 1934, has seen the company's peace-time sales quadruple since he took office.

In the same election, one new director was elected, and nine others were reelected. The new board member, Dr. James T. Eaton, research manager, has been associated with the company since 1937, and has headed the research department since 1946.

Scheuermann Resigns as Cameron Sales Mgr.

The resignation of Joseph S. Scheuermann as vice president and sales manager of Cameron Machine Co., Brooklyn, N.Y., became effective February 17. Mr. Scheuermann had been associated with Cameron since 1926, when he joined the company as midwestern sales representative. Successive advancements made him sales manager of the midwestern territory, and then sales manager for the entire company, leading in 1948 to the position he has resigned.

Until such time as Mr. Scheuermann's successor is chosen, P. J. Lathrop, company president, will direct sales activities. In the necessary reorganization of the sales activities of the company, Eugene Ward, service manager, was appointed assistant sales manager, and John Dain, supervisor of demonstrators, became service manager.

Mulchaey Resigns As Gen. Superintendent of Flambeau

J. J. Mulchaey has tendered his resignation from active duty as general superintendent of The Flambeau Paper Co., Division of The Kansas City Star, Park Falls, Wis.

Mr. Mulchaey, who will continue to serve the mill in an advisory capacity for some time, was first associated with the Flambeau mill in 1907. At that time he worked on the paper machines under the guidance of his father, then mill superintendent. After a few years, he became superintendent of the Paper Manufacturing department, a position he has held continuously, in addition to the duties of general superintendent, added ten years ago.

Gerald L. Hopkins Leaves Hoberg

The former assistant secretary and assistant treasurer of Hoberg Paper Mills, Inc., Green Bay, Wis., Gerald L. Hopkins, resigned his position February 8 to join the firm of Tape, Inc., of Green Bay, manufacturers of gummed tape.

As controller for the tape company he will be in charge of the accounting and credit departments. He assumed his new position March 1, after a Florida vacation.

Mr. Hopkins had been with the Hoberg firm for about 18 years, acting as controller and head of the credit department in addition to his duties as assistant secretary and assistant treasurer.

Before joining the Hoberg firm in 1932 Mr. Hopkins had been employed by Frazer and Torbet, Chicago public accountants. In this capacity he had performed audits for several Green Bay area firms for a number of years. Previous to his connection with the Frazer and Torbet organization, Mr. Hopkins had been connected with Ernst and Ernst, public accountants of Chicago, for two years following attendance at Marquette University.

Gerald L. Hopkins

James H. Binger

James H. Binger, associated with Minneapolis-Honeywell Regulator Co., Minneapolis, since 1943, has been elected vice president and general manager of the company's Belfield Valve division. Mr. Binger, formerly an assistant vice president, will be responsible for engineering and manufacturing in the valve division and will be in charge of valve sales through other departments of the firm.

H. F. Lefferty Now Pac. Coast Sales Mgr. Babcock & Wilcox

Recently appointed Pacific Coast sales manager of Babcock & Wilcox Tube Co. is H. F. (Skip) Lefferty. Mr. Lefferty succeeds H. P. Curtis who recently resigned the position to enter other activities.

Mr. Lefferty has been associated with Babcock & Wilcox for 33 years, having first joined the company at the Beaver Falls, Pa., plant in 1917. After service at the company's Bayonne, N.J. and Barberton, Ohio, plants, Mr. Lefferty transferred his activities to the sales department of the Tube Company in 1928. Since that time he has been manager of the Cleveland sales office, district sales manager at the Beaver Falls office, and most recently, district sales manager at the Chicago office.

The new manager's office will be located in Los Angeles, Calif.

C. W. Smith Retires— Turnbull New Pres. Central Paper

President and general manager of Central Paper Co., Muskegon, Mich., for the past 15 years, C. W. Smith has retired from his connections with the company upon the advice of his physician.

John G. Turnbull, associated with the company for some years, has been elected to the offices vacated by Mr. Smith.

Ralph C. Persons has been placed in complete charge of all Graphic Arts Group activities of Sun Chemical Corp., New York, except those in the Pacific coast division. Mr. Persons' new work was formerly the responsibility of William Recht, who recently resigned as vice president and director of the corporation.

Frederick Bohen, president of the Meredith Publishing Co., Des Moines, Ia., has been elected a member of the board of directors of Allis-Chalmers Manufacturing Co., Milwaukee. Mr. Bohen is also vice president and director of the Audit Bureau of Circulations and a director of the National Publishers Association.

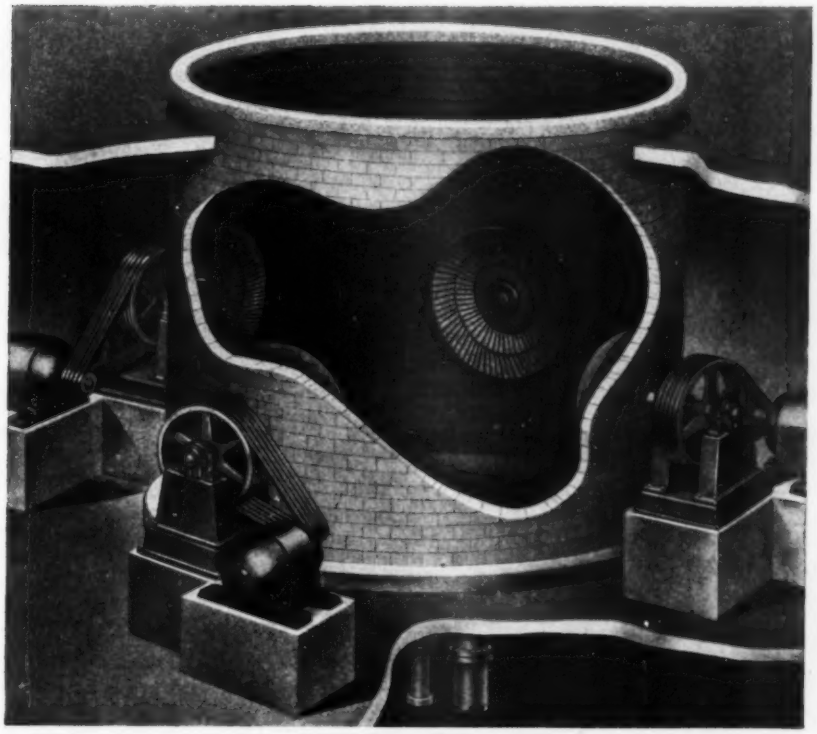
Hollis I. Conner, associated with Hyster Co., Portland, Ore., for the past four years, has been appointed assistant manager of the firm's export division. Mr. Conner will serve as head of Hyster's Peoria, Ill., export department and be contact man between export headquarters in Portland and the firm's two eastern plants.

A. G. Sharp was recently named general sales manager and assistant to the president of Kimberly-Clark Corp., Neenah, Wis. *J. B. Catlin* was at the same time appointed general merchandising manager. Both men have been associated with the firm since 1930.

Here's the New Rice Barton

QuatroPulper

. . . a high production machine . . . ideal for disintegrating pulp, broke or waste paper



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Let us tell you how the QuatroPulper can save YOU *money in processing* YOUR *particular stock. Write today.*

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is the heart of all DynoMachines. Its concave face is lined with rough, hard carbide particles. As the DynoPeller rotates it causes a suction at its center that pulls the stock towards it. Centrifugal force then causes the stock to flow rapidly over the rough carbide particles. This effective dynomizing action completely disintegrates the stock . . . separating each fibre from its neighbor while maintaining its original length.

RBR8

RICE BARTON *Research Corporation*
WORCESTER 1, MASS.

Harry G. Davis, former project engineer in charge of coating machine development at the Ozalid Division of General Aniline and Film Corp., Johnson City, N. Y., has resigned that position to become general superintendent of the Oxford Paper Co. Maine Coated Division, Rumford, Me.

Joseph N. Finnerty has been appointed to the newly-created post of assistant sales promotion manager of Scott Paper Co., Chester, Pa. Mr. Finnerty has been associated with Scott since 1934, and has worked in the advertising department since 1946.

Charles Stephenson, stationary engineer; *Reginald V. McCabe,* cost accountant; and *Cyrille Charron,* machinist, were recently retired by Fraser Cos. Ltd., Edmundston, New Brunswick, with a combined service totaling nearly 100 years.

R. F. Turner, formerly district manager of the Philadelphia offices of Phillip Carey Manufacturing Co., Lockland, Ohio, has been appointed sales manager of the firm's dealer products department. Mr. Turner has been associated with the Carey company since 1934.

PEDIGREED DOGS

CHOW CHOWS — This dog, once a native of China, is now very popular here. With his heavy coat and handsome ruff he looks most distinguished. While generally friendly he is essentially a one man dog.

The DRAPER Felt

The Felt with a Pedigree

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

CANTON, MASSACHUSETTS

RALPH E. BRIGGS, Sales Manager

BRADFORD WEST, Pittsfield, Mass. WILLIAM N. CONNOR, Jr., Canton, Mass. L. H. BREYFOGLE, Kalamazoo, Mich.
WALTER A. SALMONSON, 2514 Northeast 59th Ave., Portland, Oregon L. L. GRIFFITHS, Jr., Kalamazoo, Mich.
HAROLD H. FISH, Syracuse, N. Y.

Harold Williams, mill engineer of the Dalhousie, New Brunswick, mill of New Brunswick International Paper Co., has been transferred to the Three River, Quebec, mill of the company as assistant plant engineer. Mr. Williams was first associated with the paper company before the second World War, and returned to his position there after service with the Royal Canadian Navy.

Russell H. Herrell, executive officer of the Government Printing Office, Washington, D. C., resigned his position February 28 to enter private business. Mr. Herrell came to the G.P.O. in 1934, after service as a legal and accounting expert in the General Accounting Office, and was largely responsible for the modernization of that office which contributed to the success of the Office's wartime production and procurement program.

William S. Kennedy has been appointed sales manager of Hasco Valve and Machine Co., Milwaukee. Mr. Kennedy, who holds a chemical engineering degree granted by Purdue University, brings chemical and papermaking process control experience to the Hasco firm.

T. H. Anderson has been appointed sales engineer for Kensington Steel Co., Chicago, succeeding T. E. Bridgewater, whose affiliations with the firm were severed at the first of the year.

William J. Powers, formerly acting manager of the clad and conversion sales department of Lukens Steel Co., Coatesville, Pa., has been appointed manager of the department. Mr. Powers has been associated with the Lukens company since 1940.

Richard W. West, president and director of the Irving Trust Co., and *John D. Cowan,* recently elected vice president of West Virginia Pulp and Paper Co., New York, have been named to the board of directors of the paper company, in a stockholders' election in which 12 other board members were retained.

Hugh C. Land, assistant to the production manager of the Pennsylvania Salt Mfg. Co., Philadelphia, has been appointed production manager. In his new capacity, Mr. Land will exercise general supervision over operation of the manufacturing facilities in the parent company. Mr. Land has been with the company since 1946.

Famous trademarks in paper

Consolidated
ENAMEL PAPERS

More and more leading consumers of coated paper have come to recognize this trademark of Consolidated Water Power and Paper Company as a symbol of *quality* and *economy*.

Consolidated was first to produce an enameled paper simultaneously coated on both sides in a single, high-speed operation. The company's research and experience since that time have resulted in such high-grade enamel papers as Consolidated "Production Gloss" and "Modern Gloss."

...and paper making chemicals

Wyandotte
REG. U. S. PAT. OFF.

For more than half a century, members of the Paper Industry have relied on Wyandotte for "chemicals of quality — in quantity."

By working closely with paper manufacturers, Wyandotte often has been able to anticipate and prepare to meet the industry's changing requirements.

One product of this work is Wyandotte Precipitated Calcium Carbonate, a superlative paper-coating pigment that's "tailor-made" for the job.

This highly refined chemical is free from grit and other abrasive materials. It is high in opacity, of desirable particle size, and exceptionally bright. In addition, it has the uniformity so necessary for the extremely high speed of machine coating.

Complete information and technical data on Wyandotte Precipitated Calcium Carbonate will be furnished at your request.

Wyandotte Chemicals Corporation
Wyandotte, Michigan • *Offices in Principal Cities*

SODA ASH • CAUSTIC SODA
BICARBONATE OF SODA
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CHLORINE • HYDROGEN • DRY ICE
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CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE
PROPYLENE DICHLORIDE
AROMATIC SULFONIC ACID DERIVATIVES
OTHER ORGANIC AND INORGANIC CHEMICALS

WHERE A QUICK OPENING VALVE IS NEEDED...

MURCO QUICK OPENING GATE VALVE

MINIMUM MAINTENANCE

SEVEN STYLES

- Cast Iron Body, Disc and Gland, Steel Stem. Flange drilled for spiral pipe.
- Cast Iron Body, Disc and Gland, Steel Stem. Flange drilled for iron pipe.
- Cast Iron Body, Bronze Disc, Gland and Stem. Flange drilled for spiral pipe.
- Cast Iron Body, Bronze Disc, Gland and Stem. Flange drilled for iron pipe.
- Cast Bronze Body, Disc, Gland and Stem. Flange drilled for spiral pipe.
- Cast Bronze Body, Disc, Gland and Stem. Flange drilled for iron pipe.
- Cast Stainless Steel Type No. 316 Body, Stainless Steel Disc, Gland and stem. Flanges drilled for iron pipe.

Designed so that it is narrow from face to face of flanges that permits installation where space is limited, Murco Quick Opening Gate Valve can be operated in a fraction of the time required with a screw valve. Specially applicable for handling pulp and paper stock and water under low pressure.

The valve gate can be held in any position through the use of the clamp lever nut. Gate is easily removed from valve without disconnecting valve from the pipeline. To remove gate from valve, simply loosen two bolts which hold the bonnet to the body of the valve. Because of this feature, the valve can be cleaned very easily.

Very little maintenance—no hand wheel—practically no wear on stem. Stem is easily removed from gate. A stem extension can be added to permit operation from higher elevations.

Quotations furnished for your gate valve requirements

Made in these sizes — 6 inch, 8 inch, 10 inch, 12 inch and 16 inch.

MURCO TRADE MARK REG. U.S. PAT. OFF.

D. J. MURRAY MANUFACTURING CO.

WAUSAU *Manufacturers Since 1883* WISCONSIN

The Paper Industry Allied News

French Subsidiary Established by Foster Wheeler

A French subsidiary, Societe Foster Wheeler Francaise, has been organized by Foster Wheeler Corp., New York. Maintaining offices in Paris, the firm has been organized to handle European construction activities of the parent corporation. R. M. Serre will direct the sales work on the European continent, with headquarters at the Paris office.

Societe Foster Wheeler Francaise will provide clients with more efficient service under the direction of personnel with American engineering experience. The French company will also provide facilities for European manufacture and make available to the European operator the latest developments and refinements in American design of power plants, chemical plants and oil refineries. The basic engineering of the subsidiary will come from the parent corporation but detailed engineering and construction of plants will be handled by French personnel.

John W. Hanes Is Officer of Olin Industries

Former Under Secretary of the Treasury and New York finance executive John Wesley Hanes has been elected a vice president and director of Olin Industries, Inc., East Alton, Ill. Mr. Hanes has also been appointed to the executive committee of the corporation.

Among other positions of financial responsibility, Mr. Hanes is a director of Ecusta Paper Corp., Pisgah Forest, N.C., where Olin will soon construct a new plant for the manufacture of cellophane under license from E. I. du-Pont de Nemours and Co. (*Cf. P.I. and P.W., Dec., 1949*).

American Brake Shoe Consolidates All Can. Subsidiaries

The operation of all Canadian subsidiaries of American Brake Shoe Co., New York, have been consolidated into one corporation, Dominion Brake Shoe Co., Ltd. A wholly owned subsidiary, Dominion Brake Shoe has acquired the operating assets and business of Joliette Steel Ltd. and Ramapo of Canada, Ltd.

With principal offices in Montreal, Canada, the Canadian corporation will operate all of the Canadian plants of the parent company through five divisions, Brake Shoe Division, Joliette Steel Division, Canadian Ramapo Division, American Brakeblok Division, and Kellogg Division. Plants located at Lindsay, Niagara Falls and St. Thomas, in Ontario, and at Joliette, Quebec, will continue to be operated.

The Bristol Co., Waterbury, Conn., displayed its completely new "Series 500" recording and controlling instruments at the Morrison Hotel in Chicago during the week of February 27. The exhibit had been shown previously in several eastern cities. It will be sent to the International Trade Fair to be held at Toronto in May

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CHICAGO DISTRICT SALES offices of Reliance Electric & Engineering Co., Cleveland have been moved to larger quarters at 154 East Erie St. The telephone remains the same, WHitehall 4-1414.

Taylor Forge & Pipe Forms Canadian Subsidiary

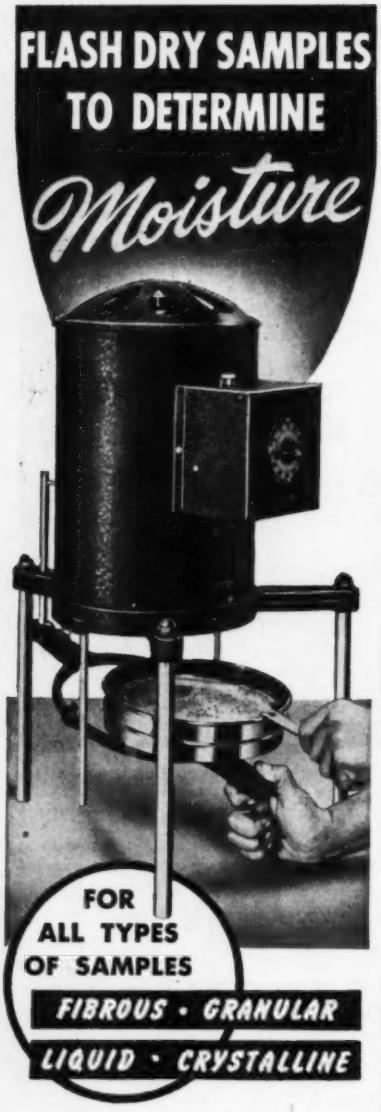
To augment the productive capacity of Taylor Forge & Pipe Works, Chicago, the company has formed a new subsidiary, Taylor Forge & Pipe Works of Canada, Ltd., which will be located at Hamilton, Ontario. Other plants of the firm are located at Chicago, Carnegie, Pa.; and Fontana, Calif.

A new building is being constructed at Hamilton to house the new plant, which is expected to be staffed by Canadian personnel.

NEW REPRESENTATIVES for The Whiton Machine Co., New London, Conn., are W. E. Pearson Co., serving the firm in Washington state from Seattle offices, and T. C. Chown, Ltd., West of Montreal, Canada, which will represent the Whiton firm in Canada.

A NEW SALES OFFICE has been opened in Charleston, W. Va., by Reliance Electric & Engineering Co., Cleveland. William C. McConnell, formerly a sales engineer in the company's Pittsburgh district, is branch manager of the new office, located at 1206 Kanawha Blvd., East.

INSTRUCTION COVERED by the April 10 to 14 second quarterly instrumentation course for 1950 conducted by Fischer & Porter Co. at its Hatboro, Pa., plant will include manufacture, calibration, installation, operation and maintenance of the company's line of process control instruments.



Samples of your materials can be dried and tested for moisture content in a matter of a *few minutes.* You will save valuable processing time, reduce rejections, and improve product quality, when you install a DIETERT-DETROIT MOISTURE TELLER.

The moisture test is made in exact moisture percentage and test results will check exactly with the standard oven test. No corrections or calibrations are necessary.

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The Paper Industry Necrology

Sheldon C. Collins

Vice president and production manager of Rising Paper Co., Housatonic, Mass., Sheldon C. Collins passed away February 10 at Great Barrington, Mass., at the age of 59.

Mr. Collins, a graduate of Brown University, joined the Rising company in 1915, and was associated with the firm continuously until his death, taking a leave of absence only to serve in the U. S. Army Infantry during World War I. He had served as a member of the board of directors of the Rising company, and was an official of several charitable organizations.

Sheldon Collins

The widow and three children survive.

Nelson Telling was the victim of a fatal accident which occurred February 9 at the plant of the Erving Paper Co., Erving, Mass. *Herbert F. Diudkenbroad,* a maintenance man in the Erving plant, passed away suddenly the same day. Both men were 43 years of age.

Kenneth Huse, retired general superintendent of the paper division of Eastman Kodak, Kodak Park, N. Y., passed away February 4, at the age of 59. His widow and two sons survive.

Andrew J. Haber, papermaker in the South Hadley, Mass., division of American Tissue mills for many years, passed away February 8 at the age of 64.

Herbert E. Hall, who retired as superintendent of St. Regis Paper Co., Norfolk, N. Y., in 1949, passed away February 20. He was 70 years old.

Ward Smith, former vice president and general manager of Delaware Paper Mills, Wilmington, Del., passed away January 27. Mr. Smith had been general superintendent of Philadelphia Paper Manufacturing Company, Manayunk, Del., for about 40 years before joining the Delaware company, from which he retired in 1939. Mr. Smith was a life member of American Pulp and Paper Makers Superintendents Association. The widow and one daughter survive.

John B. Venturini, representative for Cameron Machine Co., Brooklyn, N. Y., passed away at his home in Dumont, N. Y., February 4. Mr. Venturini, who was 66, had been associated with Cameron since 1914. The widow and a daughter survive.

Carl G. Naylor, founder and president of Naylor Pipe Co., Chicago, passed away February 13. Mr. Naylor, who was instrumental in developing the first spiral-welded pipe and its production equipment, is survived by his widow.

Frederic Alan Schaff, chairman of the board of Combustion Engineering-Superheater, Inc., New York, passed away February 7 at his home in Bronxville, N. Y.

Merton S. Fogerty

The chief engineer of Sutherland Paper Co., Kalamazoo, Mich., Merton S. Fogerty, passed away suddenly January 31.

Mr. Fogerty, a well-known paper engineer, was born April 20, 1891, in Worcester, Mass. After graduation from Worcester Polytechnic Institute, he held positions in the engineering departments of such companies as Abitibi Power & Paper Co., Ltd., Iroquois Falls, Ontario; Kimberly Clark Corp., Kimberly, Wis.; Bird & Son Co., Inc., East Walpole, Mass.

Mr. Fogerty's later positions included chief engineer's posts at Groveton Paper Co., Groveton, N. H., and Michigan Paper Co., Plainwell, Mich. In late 1944 he joined the Bryant Paper Co., becoming vice president in charge of engineering in 1946. He had been chief engineer at the Sutherland Paper Co. since May 1, 1947.

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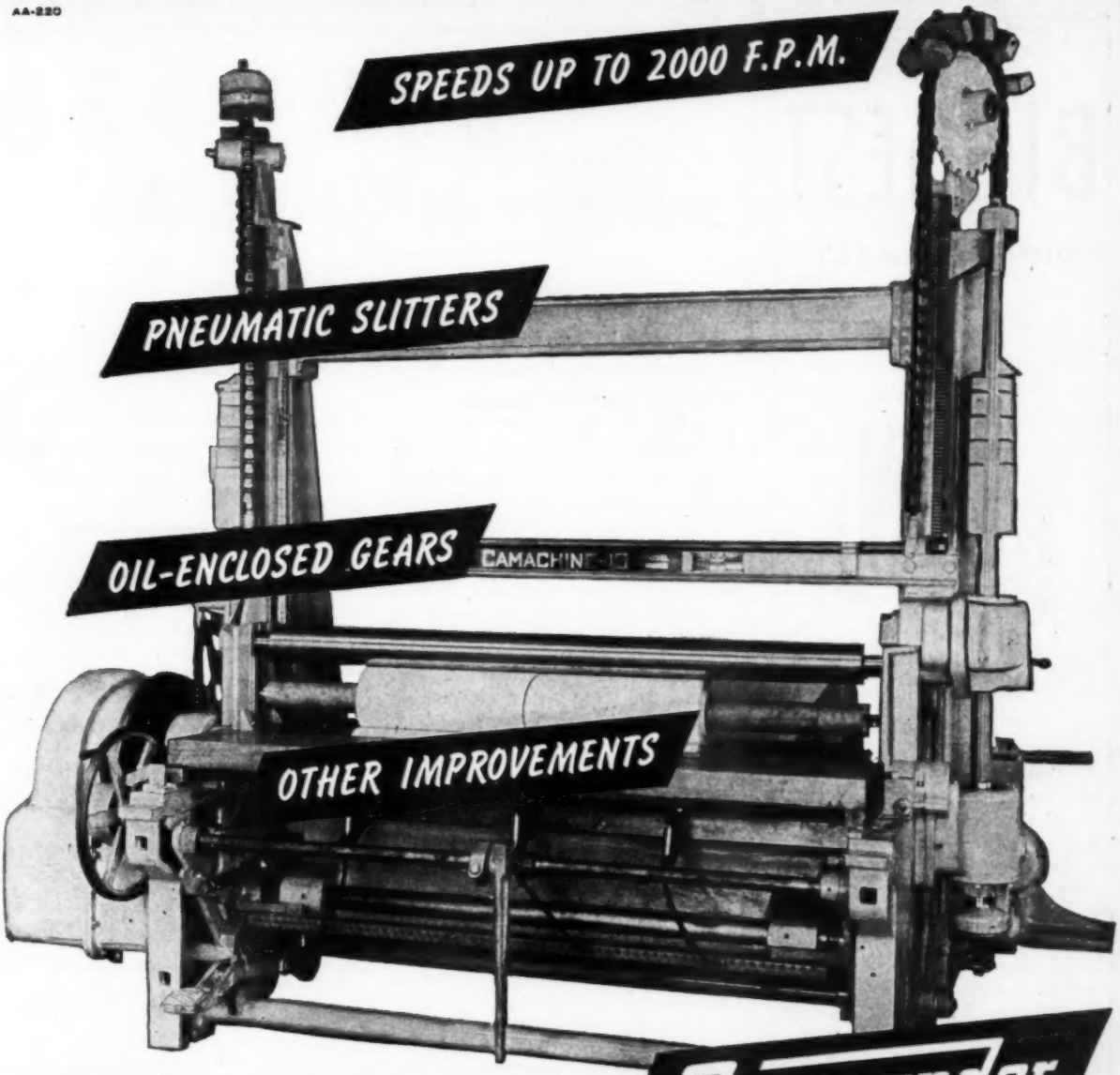

with the new Camachine Commander

A VERSATILE, NEW HIGH-SPEED SLITTER-REWINDER FOR MILLS, MANUFACTURERS AND CONVERTING PLANTS

THE NEW COMMANDER truly represents one of the greatest advances in Cameron's half century of specialization in slitter-rewinder engineering. Cameron experience and imagineering have blended in the *Commander* to provide new high speeds, new trouble-free dependability, and new features for top quality roll production at new low costs.

Makers and users of plain, waxed, gummed and coated papers or paper board will find the *Commander* a highly profitable addition to plant production facilities.

Among the outstanding features of the new *Commander* are the following:

The *Camachine Pneucut* pneumatic slitters allow pressure on the entire line of cutters to be controlled from a single point. Pneumatically controlled pressure assures cleaner cutting through longer runs, with no time lost for separate cutter adjustments. Shear cut units may be specified.

The main drive unit is now completely enclosed for safety, while the main drive shaft outboard bearing support has been made an integral unit of the main frame, assuring exact alignment.

All gearing is now completely enclosed and running in a bath of oil, for longer life and added safety.

You'll like the new style of the *Commander* too. It's a good-looking machine to have on the floor, and it pays off day after day in fast, high quality, trouble-free production. You are invited to send for complete information.

Camachines *FOR FAST, TOP QUALITY ROLL PRODUCTION . . . the world over*

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. . . that's what the Jumbo Posters are. These giant-sized billboard displays measure 11 feet 8 inches wide by 9 feet 11 inches high . . . so BIG they can't be missed!

Many people in your plant aren't aware of some of your most important safety work—essential measures not apparent to the eye. Everybody, on the other hand, can see and understand Jumbo Posters. They are an effective way of reminding your associates—from the president down to the office boy—that safety is a live-and-going concern in your plant.

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NATIONAL SAFETY COUNCIL

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The Paper Industry Safety News

First Calendar Year Safety Contest Ended

▶▶▶ FINAL SCORES in the 1949 Pulp and Paper Section Safety Contest have been released by the National Safety Council. These are the first scores issued for a 12-month, calendar-year contest. Thirty-five mills, including two with below exposure, completed the contest with perfect records.

Published here are the names of contestants that will be awarded trophies and certificates. Those ranking 1 will receive first place trophies; certificates will go to participants ranking 2 and 3.

The winner of the Edward Benton Fritz Memorial Trophy will be announced as soon as the judges reach a decision on the Grand Prize award.

Division I—Paper and Pulp Mills

Group A

1—Brown Corp., LaTuque, Can.
2—Kimberly-Clark Corp. (Lakeview Mill), Neenah, Wis.
3—Champion Paper & Fibre Co., Hamilton, Ohio

Group B

1—National Container Co. (Kraft Pulp Division), Jacksonville, Fla.
1—West Virginia Pulp & Paper Co., Williamsburg, Pa.
3—Thilmany Pulp & Paper Co. (Upper Mill)

Group C

1—Marathon Corp., Menominee, Mich.
1—National Vulcanized Fibre Co., Yorklyn, Del.
1—Price Brothers Co. Ltd., Jonquiere, P. Q., Canada
1—Congoleum-Nairn, Inc., Cedarhurst, Md.
1—National Vulcanized Fiber Co., Newark, Del.

Group D

1—Mead Corp., Harriman, Tenn.
1—Container Corp. of America, Carthage, Ind.
1—Mead Corp. (Wheelwright Div.), North Leominster, Mass.
1—U. S. Gypsum Co., Oakmont, Pa.
1—Marathon Corp., Ashland, Wis.
1—Armstrong Cork Co., Pensacola, Fla.
1—Strathmore Paper Co. (Mill No. 1), Woronoco, Mass.
1—Ward Paper Co., Merrill, Wis.
1—Hollingsworth-Whitney Co., Madison, Me.
1—National Gypsum Co., Newburgh, N. Y.
1—Riegel Paper Corp., Riegelsville, N. J.
1—Spaulding Fibre Co. (Hayes Plant), No. Rochester, N. H.

Division II Paper and Board Remanufacturing

Group A

1—Lily Tulip Cup Corp., College Pt., N. Y.
2—Flintkote Co., Chicago Hts., Ill.
3—Behr-Manning Corp., Troy, N. Y.

Group B

1—National Container Corp. (Container Div.), Jacksonville, Fla.
1—Marinette Paper Co., So. Glens Falls, N. Y.
3—Old Colony Env. Co., Westfield, Mass.

Group C

1—Fibreboard Products, Inc., South Gate, Calif.
1—Container Corp. of America, Baltimore, Md.
1—Bird & Son, Inc., Shreveport, La.
1—Kimberly-Clark Corp., Appleton, Wis.
1—South West Box Co., Sand Springs, Okla.
1—Certain-teed Products Corp., Kansas City, Mo.
1—Pillsbury Mills, Inc., Wellsburgh, West Va.
1—Thilmany Pulp & Paper Co., Kaukauna, Wis.
1—Certain-teed Products Corp., Buffalo, N. Y.
1—Flintkote Co., Hollywood, Calif.
1—Bay West Paper Co., Green Bay, Wis.
1—Lloyd A. Fry Roofing Co., San Leandro, Calif.

C-Z Backtender Wins in Safety Slogan Contest

More than 2000 employees from 19 Pacific Coast mills competed in a safety slogan contest completed recently. Thomas J. Shurn, backtender on a paper machine at the Camas, Wash., plant of the Crown-Zellerbach Corp., was the award winner with the slogan, "One moment of carelessness—a lifetime of regret."

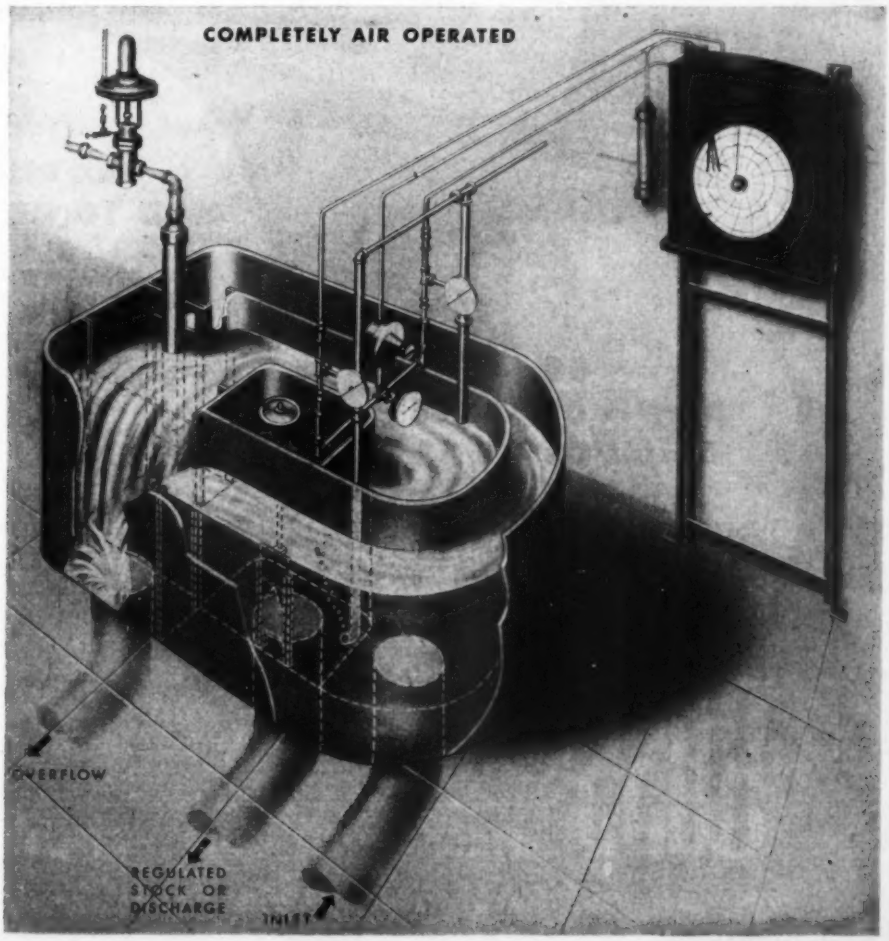
Mr. Shurn's winning slogan was chosen at the Washington State Pulp and Paper Industry-Management Safety Conference held at Bellingham, Wash., Dec. 8 and 9.

BRAMMER

recording consistency control

For Accurate Regulation of Consistency . . . and Recording Both Before and After Diluting Water Has Been Supplied

Regulates the consistency of all types of stocks, slow or free.
Regulates difficult stocks such as rag, dirty waste paper, or free sulphite, and is not affected by the presence of knots, slivers, etc.
A Foxboro instrument and Foxboro Stabilflo diluting water valve do the work efficiently, dependably and maintain consistency regulation to 1/10 of 1%. Many mills report much closer control.
Better control and uniformity are obtained when the Brammer is used before paper machines, washers, Jordans and refiners, knotters, screens, thickeners, and before metering and proportioning of pulps.



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THE NEWS THAT BROKE JUST A FEW MONTHS AGO

. . . via this Ross ad in several business magazines. So great was the response that —

PRODUCTION HAD TO BE BOOSTED

. . . to keep current with orders. Result? Lower manufacturing costs — savings passed on to you.

SO, DOWN GO PRICES AS MUCH AS 22%

. . . on some sizes and from 10 to 22% on others.

$ $ SAVE $ $

Act now. If you haven't yet obtained information on the new Ross Type SSCF, do so at once by writing for Bulletin 1.7K1.

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The Paper Industry International Review

Australian News

Tasmanian mills will supply about 75,000 tons of newsprint next year, leaving 100,000 tons to come from overseas, or 30,000 tons in addition to the tonnage on offer from Great Britain.

A review of the pulp and paper industry's progress released by the Commonwealth Division of Industrial Developments reveals that the Australian pulp and paperboard industry will be able in the near future to supply most of Australia's requirements except for newsprint. Planned developments in the industry will nearly double the present production within a few years. Annual production has risen from 100,000 tons in 1939 to 207,000 tons in 1949.

Wood pulp produced from Australian eucalyptus, long considered impractical for pulp uses, now forms the basis of the country's wood pulp industry. Although newsprint, the largest single item of demand, was not produced in Australia until 1940, the output is now 32,000 tons a year, with a total demand of 170,000 to 175,000 tons. Within the next year newsprint production will reach 80,000 tons a year, while demand may rise to 185,000 tons; available timber resources will probably limit the production to a maximum of 80,000 tons a year.

Wrapping paper production should be able to cope with the Australian demand by 1952; production will be about 70,000 tons a year, and requirements about 50,000 tons.

Production of rayon and newsprint from bagasse is being investigated by a research team at Mackay, Queensland, Australia. Manufacture of a pure cellulose is also being studied.

Ballarat Paper Mills, Ltd., is expected to be in production in about six months. The mill probably will produce as one of its papers high quality art paper as nearby kaolin white clay deposits are exploited by the Bablarat Clay Co. Drilling has indicated a clay bed of more than 30 feet deep, sufficient to supply the Ballarat mill and yet ship two-thirds of the output to Burnie in Tasmania for use of the mills located there.

More Import-Export Data To Come from ECA

An increased amount of Marshall Plan trade information and new special services to American small businessmen is expected in the near future from the Economic Cooperation Administration.

Thus far, the ECA is providing small firms with information in advance of purchases to be made in this country by Austria, France, Germany, Italy, and Turkey; expected soon is a booklet entitled, "Guide for the Prospective Exporter," explaining exporting techniques and supplementing an earlier booklet, "ECA and Small Business." Complete information on exports to Greece will be available within a short time, and a directory of importers of all the participating countries is being planned.

FOUR PAPER MILLS in Uruguay are reported to have purchased new machinery which will increase production by at least 100 per cent, or an amount far above national requirements. Exports are unlikely, mainly because of high operating costs and the necessity of importing pulp and other raw materials. (From *Foreign Commerce Weekly.*)

Foreign P & P Experts Tour U.S. Mills Under ECA Auspices

Thirty-four members of a Pulp and Paper Productivity Team of experts from twelve Marshall Plan countries recently visited the Stamford Research Laboratories of American Cyanamid Co., New York, on the first stop of a nine-week tour of paper mills, laboratories, and plants manufacturing machinery for the paper and pulp industry in this country.

The group is in the United States under the auspices of the Economic Cooperative Administration on a trip which is part of a long range program designed to bring about closer co-operation and an interchange of information between American and European industry.

Swedish Patent for Bleached Pulp Pending

The entire Swedish pulp industry may have an opportunity to export pulp bleached with chlorine dioxide according to a patented method, if the patent is declared invalid. The patent, obtained in 1938 by a pulp company near Gefle, is contested by several Swedish mills which claim that since it lacked novelty it was granted without justification. A large part of the pulp industry is affected by the patent, according to the press. At present, only two companies can sell pulp bleached by this process in the United States, it is reported. (From *Foreign Commerce Weekly.*)

Foreign Abstracts . . . . . .

Wear of Paper Machine Wires

The causes and means for reducing the wear of the wires are discussed. Mechanical abrasion of the phosphor-bronze fourdrinier wires is the principal cause for their premature wear and tear whereas corrosion usually plays a subordinate part. The life of a wire is prolonged by cautious handling during installation, and on highly frictionless operation at the wet-end of the machine. High speed operation leads to shortened wire-life. In papermachine operation, the chief offenders are the suction-boxes.

It is requisite that sand be absent from the stock, and that an excessive or sudden vacuum be avoided. Other precautions (such as appropriate covering material for the suction boxes) are listed and discussed. Damage may be caused by single protruding warp or weft strands of the wire. The possible faults and weaknesses of wires are outlined. The author recommends slack-running of the wire, especially in the case of very long wet ends. Tension should be just enough to prevent slippage of the traveling wire and to obviate the formation of folds in its surface.

Stretch rolls (somewhat bent in the middle) are hazardous. Corrosion occurs more frequently in slow running papermachines, because of constant contact of the wire with slightly acidulated water. However, occasional washing of the phosphor-bronze wire with very dilute hydrochloric acid does not appear to be very harmful. Alum may cause corrosion, and the addition of sodium bisulphite or "hypo" to the beater (with a view towards brightening unbleached pulps) may prove detrimental to the wire. "Galvanic" corrosion may also be a hazard. K. Keim. *Wochbl. Papierfabr.* 77, 359-62 (Oct. 15, 1949) (In German).

Ninety Degree Flexibility of Packaging Materials

An instrument is fully described—and illustrated—which may be used in measuring the flexural properties and springback angle of packaging materials. The sample is clamped between flat blocks so that a portion extends beyond the block. This protruding portion is then bent through a 90-deg. angle about an edge of known radius of curvature, and is subsequently released. The

instrument gives a means of measuring the "angle of return." Using a series of radii of curvature for the edge about which the specimen is bent, it is possible to plot the "springback angle" versus the radius of curvature. The author draws a straight line joining the points: ($r=0.01$ mm., $\phi=90°$) and ($r=100$mm., $\phi=0°$). This line is divided uniformly into 100 parts. This constitutes the scale for the springback value or coefficient. For any particular sample, the coefficient is given by the point at which the curve of the sample intersects this scale. The instrument also permits the measurement of the "springback moment."

Operation of the instrument is fully described and data and graphs are given which compare the author's values with those obtained by means of other testing devices. Good correlation was obtained between the springback coefficient and the flexural resistance by Clark's method [Paper Trade J. *121*, 31 (1945)] but there was no correlation between his springback moment and Clark's flexural resistance. The author concludes that the springback moment measures an entirely different property from the one given by Clark's fluxural resistance method. The article includes 9 figures. Erhard Liebert. *Das Papier* 3, 382-6 (1949) (In German).

Peptide-like Contaminants in Filter Paper

When chromatograms identifying amino acids in urine were developed with "ninhydrin reagent," it was found that a number of the acids apparently found their genesis *not* in the urine but in the *paper*. Thus a protein-like contaminant in the filter paper was suspected. Whatman filter papers Nos. 1, 2, and 4 were examined and each paper strip was set up as in a chromatogram, excepting that only distilled water was used as a solvent. The water was allowed to run off for 5 days into receiving vessels, and each 24 hour collection was filtered and evaporated to dryness.

Only the first two 24 hour samples contained much dissolved material, which when mixed and hydrolyzed with dilute hydrochloric acid yielded à series of acids (shown by further chromatographic separation). It was possible to identify aspartic acid, cysteine, glutamic acid, glycine and proline, and probably alanine, valine, leucine, arginine and tyrosine. The last three day runs yielded no compounds reacting with ninhydrin. Thus the paper when washed and drained may be freed from nitrogenous components within 48 hours. Victor Wynn, *Nature* 164, 445 (1949).

"Kozo" (Paper mulberry) in a Mild Soda Cook

The refined bast fibers were cooked at 100C. with caustic soda solutions varying from 1 to 15% based on the weight of fibers. The digestion period varied from 0.5 to 5.0 hours. The waste liquors were subjected to conductometric and potentiometric titrations with 0.02 *N* solutions of hydrochloric acid and sodium hydroxide respectively. The "distribution" of the original caustic soda was then estimated from the analytical data; *i. e.* the alkali which had reacted with weak acidic organic substances in the bast, the free NaOH in the liquor and the alkali retained by the pulp were calculated. When the amount of caustic used was below that required, the free organic acids were also determined.

The ratio of dissolved organic matter to combined alkali correspnded approximately to 1 hexose unit to 1 sodium hydroxide. This was virtually independent of the cooking time and to the amount of alkali used in the digestion. Acidic organic substances appeared to be mixtures of acids, with dissociation constants ranging from 10^{-5} (to 10^{-6}) to 10^{-8} (to 10^{-9}). Hajime Okada and Tadashi Shogenji, *J. Japan Tech. Assoc. Pulp Paper Ind.* 2, 5-11 (1948). (In Japanese with English summary); through *B.I.P.C.* 20, 330 (1950).

New Indicators for Water Permeability in Papers

These new sensitive indicators may be used in ordinary daylight for testing the size resistance of papers by the usual flotation technique of Noll and Preiss (Papierfabr. 35, No. 25, 213-9 (June, 1937)). These dye receipts were developed because of the present scarcity of quartz lamps in Germany. The table which follows gives the composition of some of the dry dye mixtures used, and their colors when dry and moist. Their sensitivity is improved by the addition of suitable wetting agents and of various salts.

New Dry Daylight Indicators

Composition	Color When Dry or Wet
0.5 g. phenyldimethylpyrazolone 0.5 g. iron alum 0.5 g. Nekal BX 8.5 g. dry sodium sulphate	(2) (a)
0.5 g. sodium anthraquinone 2-sulphonate 0.5 g. Nekal BX 3.0 g. sodium bisulphite 6.0 g. dry sodium carbonate	(1) (a)
0.5 g. phenolphthalein 0.5 g. Nekal BX 9.0 g. dry sodium carbonate	(1) (b)
0.3 g. alizarine 0.5 g. Nekal BX 9.2 g. dry sodium carbonate	(3) (b)
0.5 g. indanthrene yellow G 0.5 g. Nekal BX 3.0 g. sodium bisulphite 6.0 g. dry sodium carbonate	(4) (c)
0.5 g. ferric alum 0.5 g. potassium ferrocyanide 0.5 g. betaine hydrochloride 0.5 g. Nekal BX 8.0 g. dry sodium sulphate	(4) (c)
0.5 g. gallic acid 0.5 g. iron alum 0.5 g. Nekal BX 8.5 g. dry sodium sulphate	(2) (d)

Color when dry:	*Color when wet:*
(1) Colorless	*(a) Blood Red*
(2) Nearly colorless	*(b) Violet*
(3) Pale Pink	*(c) Dark Blue*
(4) Pale Yellow	*(d) Blue-Black*

Other combinations are also described. Use of lighter shades are unsatisfactory and the present indicators apply only to white or pale colored papers. In darker papers the quartz lamp with fluorescent dyestuff furnishes the most satisfactory procedure. August Noll. *Wochbl. Papierfabr.* 77, No. 16, 445 (Nov. 30, 1949) (In German).

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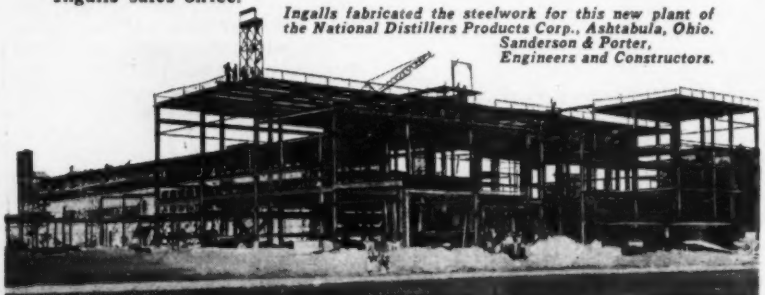

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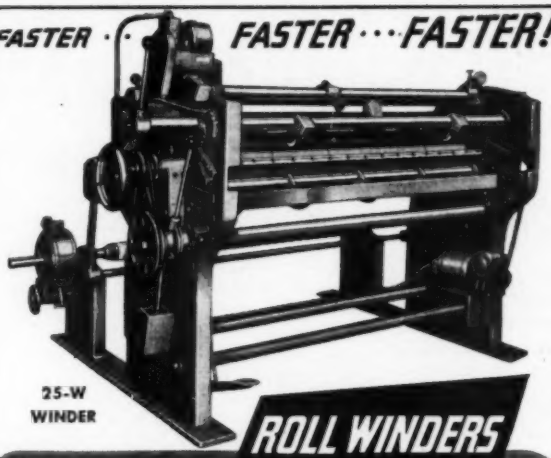

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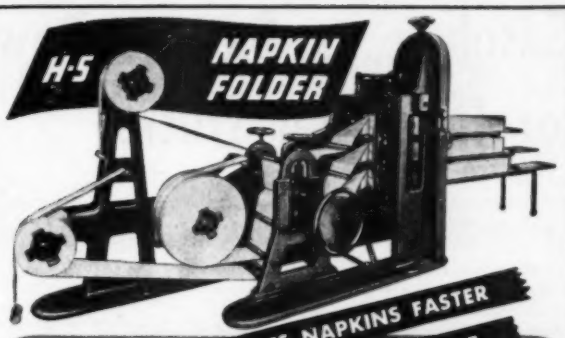

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Gasoline vs. Battery Power for Industrial Trucks

W. B. McCLELLAND
Clark Equipment Company

▶▶▶ WHENEVER a purchaser is ready to buy industrial trucks there is always a question of the type of power to use, gasoline engines or batteries. There are various points to consider. The factors listed below are intended as a check-list of factors to consider and evaluate when the question is "Gasoline versus battery power for Industrial Trucks."

First, there are the estimated costs for each type. A suggested cost analysis sheet is presented in Exhibit A. After the detailed cost estimates are established the over-all costs can be readily computed. The total costs computed in Exhibit A are plotted in Exhibit B and indicate that the activity of the trucks is the basic factor influencing the relative total cost.

There are other considerations which cannot be evaluated in dollars and cents but still must be given consideration:

(1) The shorter the distance the material must be moved the more advantage there will be for electric trucks. The basic reason for this is that the electric truck has inherent ability to start heavy loads more economically than the gasoline engine while the gasoline unit excels when propelling heavy loads at sustained speeds.

(2) For the same reason the more starting and stopping, lifting and tilting, the better the electric will be able to compete.

COST COMPARISONS—CLARK GASOLINE AND ELECTRIC POWERED TRUCKS

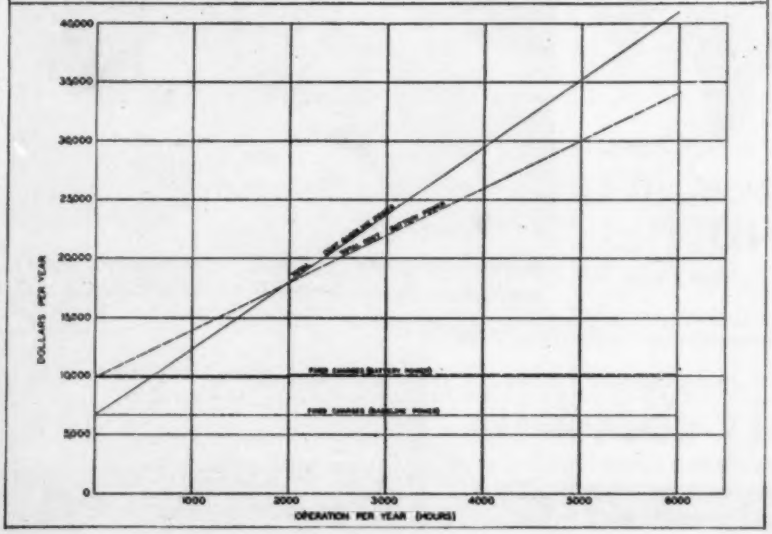
BASED UPON 250 WORKING DAYS PER YEAR — NO. OF UNITS 10

	4 HOURS WORK PER DAY		8 HOURS WORK PER DAY		8 HOURS WORK PER DAY		16 HOURS WORK PER DAY		24 HOURS WORK PER DAY	
	GAS	ELECTRIC	GAS	ELECTRIC	GAS	ELECTRIC	GAS	ELECTRIC	GAS	ELECTRIC
INVESTMENT										
TRUCK COSTS	29520	38320	29520	38320	29520	38320	29520	38320	29520	38320
BATTERIES	—	15500	—	15500	—	15500	—	31000	—	31000
CHARGER	—	6900	—	6900	—	6900	—	6900	—	6900
CHARGER INSTALLATION	—	500	—	500	—	500	—	1500	—	1500
FUELING FACILITIES	1000	—	1000	—	1000	—	1000	—	1000	—
FREIGHT	1000	1000	1000	1000	1000	1000	1000	1250	1000	1250
TOTAL INVESTMENT	31520	62220	31520	62220	31520	62220	31520	78970	31520	78970
FIXED CHARGES ANNUAL										
DEPRECIATION TRUCK INVESTMENT(10)	6300	9350	6300	9350	6300	9350	6300	9800	6300	9800
INTEREST ON INVESTMENT(7%)	—	—	—	—	—	—	—	—	—	—
TAXES & INSURANCE (1%)	315	620	315	620	315	620	315	790	315	790
TOTAL ANNUAL FIXED CHARGES	6615	9970	6615	9970	6615	9970	6615	10390	6615	10390
VARIABLE CHARGES ANNUAL										
GASOLINE (2)	1800	—	2400	—	3200	—	6400	—	9600	—
ELECTRIC POWER (3)	—	540	—	810	—	1080	—	2160	—	3240
BATTERY DEPRECIATION (4)	—	3100	—	3100	—	3100	—	6200	—	7750
OIL (5)	185	—	275	—	375	—	750	—	1125	—
GREASING & INSPECTION (6)	1875	1875	1875	1875	1875	1875	3750	3750	5625	5625
PARTS & MAINTENANCE (7)	2000	1000	3000	1500	4000	2000	10000	4400	18000	7200
TOTAL VARIABLES ANNUAL	5660	6515	7550	7285	9450	8055	20900	16510	34350	23815
TOTAL ANNUAL CHARGES	12275	16485	14165	17255	16065	18025	27515	26900	40965	34205

NOTE 1 - TRUCK DEPRECIATION BASED UPON 5 YEARS LIFE.
NOTE 2 - GASOLINE COSTS BASED UPON (a) CONSUMPTION 1 GALLON PER HOUR (b) 15 CENTS PER GALLON.
NOTE 3 - ELECTRIC POWER COSTS BASED UPON (a) 1 GALLON GASOLINE EQUIVALENT TO 5.4 KWH CURRENT (b) COST 1 CENT PER KWH. COST 1 CENT PER KWH (c) BATTERY & CHARGER EFFICIENCY 30%.
NOTE 4 - BATTERY DEPRECIATION BASED UPON 1500 CYCLES OR AMP HRS.
NOTE 5 - OIL COSTS BASED UPON (a) CONSUMPTION 1 QT. PER 8 HOUR - SHIFT (b) 15 CENTS PER QT.
NOTE 6 - GREASING & INSPECTION COSTS BASED UPON (a) 1/2 HOUR LABOR PER SHIFT PER TRUCK (b) $1.50 PER HOUR
NOTE 7 - PARTS & MAINTENANCE BASED UPON:

GASOLINE POWER
20 CENTS PER HOUR (ONE SHIFT OR LESS)
25 CENTS PER HOUR (TWO SHIFTS)
30 CENTS PER HOUR (THREE SHIFTS)

ELECTRIC POWER
10 CENTS PER HOUR (ONE SHIFT OR LESS)
11 CENTS PER HOUR (TWO SHIFTS)
12 CENTS PER HOUR (THREE SHIFTS)



(3) Another consideration is the effect which a breakdown of the industrial trucks will have upon the operation of the plant. If the cost of a stop in production will be appreciable and the flow depends upon the reliability of the truck, the electrics should be favored. Their downtime is much less than for the gasoline power.

(4) It is suggested that thought be given to the probable length of time the trucks can be used. In the calculations a five year depreciation was used. Will the trucks be abandoned because they are worn out, or will they be abandoned because the operation no longer requires them? If the trucks will operate longer than the depreciation time allowed, give thought to the charges to operations for each type after the book value is zero.

(5) Another item is the capital set-up and a question of whether low investment now is more important than daily savings over the next few years.

(6) If the fumes or noise of gasoline engines is objectionable, that should be given its proper consideration.

(7) The cost for electrical energy was based on the daytime rate. If the utility offers lower rates during the night and arrangements can be made to charge batteries during those hours, the cost figures should be altered accordingly.

(8) Thought should be given to the distance the trucks must operate from a central point. If the work is concentrated they will be readily available for charging, but gasoline and oil can be transported a distance easier than charged batteries.

(9) Consideration should be given to the value of space required for the truck. The turning radius for gasoline powered trucks usually is less than for comparable electric units.

(10) If there are ramps to climb they should be considered. Electrics will excel on very short humps, but the excessive power demands of long ramps favor the gasoline power.

(11) The surface over which the trucks must travel should be considered. Gasoline powered trucks can be supplied with either pneumatic or hard rubber tires while electrics, in most cases, are furnished only with hard rubber tires. If the traction provided by pneumatic tires is desirable, that factor should be given its proper weight.

(12) The fact that a gasoline powered truck can be "pushed" to do more work during an emergency or peak period is both an advantage and a disadvantage. The advantage comes from work accomplished and the disadvantage from the wear and resulting increase in cost for maintenance. On the other hand, the battery powered truck cannot be abused in similar manner since the output of the battery is a limiting factor.

The above factors, properly weighed, will indicate the merits of each type of power for specific operations.

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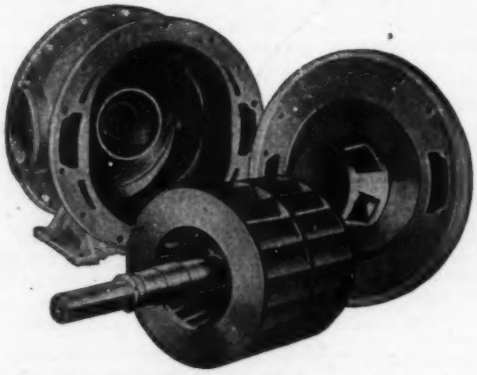

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FEDERAL

Newsprint Paper in 1949*

J. J. ZIMA, Statistician
Newsprint Service Bureau

▶▶▶ THE QUITE generally forecast recession in business activity in the United States developed as expected by many during the earlier months of 1949 but did not attain really serious proportions at that time. However, a reversal of the trend occurred in August only to be interrupted by the strike-induced decline to the year's low point in October and which was succeeded by a very pronounced recovery thereafter. Thus the overall record of the year, while somewhat below that of 1948 was nevertheless very good and particularly so in comparison with postwar business declines of the past.

The vicissitudes of the United States paper and paperboard industry last year in general paralleled the trend of the overall economy. Starting from a fairly high level, output went into a decline which was not arrested until August, with September showing further improvement while production in the final three months exceeded that of any quarter on record. Preliminary data indicate production of about 20,000,000 tons of paper and board in the United States in 1949 while it has been stated that Canadian output last year approximated the somewhat more than 6.000 000 tons turned out in 1948. Adding thereto the production in Newfoundland, continental output (excluding Mexico) was in the neighborhood of 26,450,000 tons which was about 7 per cent less than the all-time high of 1948 and 3 per cent under the 1947 total.

In spite of further contraction of overseas markets for North American newsprint and in contrast to the generally lower level of business activity in the United States, consumption of newsprint paper in this country was of such proportions that an all-time record productive effort by the continental industry was required to achieve a balance between over-all demand and supply.

Consumption of Newsprint Paper in the United States 1924-1949 (Census Bureau estimates as of July 1)

Year	Tons	Pounds Per Capita	Index Numbers 1929 = 100 Tons	Index Numbers 1929 = 100 Pounds Per Capita
1924	2,737.000	48.4	72	78
1925	2,934,000	51.2	78	82
1926	3,307 000	56.8	87	91
1927	3,445,000	58.2	91	94
1928	3,515,000	58.7	93	94
1929	3,780,000	62.2	100	100
1930	3,563,000	57.9	94	93
1931	3,245,000	52.3	86	84
1932	2,840,000	45.4	75	73
1933	2.690,000	42.8	71	69
1934	3,058.000	48.3	81	78
1935	3,300,000	51.7	87	83
1936	3,650,000	56.8	97	91
1937	3 820.000	59.3	101	95
1938	3,458,000	53.1	91	85
1939	3,550,000	54.1	94	87
1940	3,730 030	56.2	99	90
1941	3,930,000	58.7	104	94
1942	3,800 000	56.4	101	91
1943	3,650,000	53.5	97	86
1944	3,250.000	47.1	86	76
1945	3,480,000	49.8	92	80
1946	4,296 000	60.8	114	98
1947	4,753.000	66.3	126	107
1948	5.141.000	70.4	136	113
1949	5,529,000	74.1	146	119

SUPPLY

Production

Representing the fourth in a series of consecutive record years, North American newsprint paper output in 1949 totaled 6,076,000 tons. This was an increase of 226,000 tons or nearly 4 per cent over production in 1948 while that of 1946—the first of the current sequence of peak output years—was exceeded by almost 800,000 tons and the to some extent artificially stimulated prewar production record in 1937 was surpassed by 1,132,000 tons.

The 1949 continental newsprint production total was made up of 4,732,000 tons or 78 per cent in Canada, 900,000 tons or nearly 15 per cent in the United States and 444,000 tons or slightly more than 7 per cent in Newfoundland which as of April 1st of that year became the tenth province of Canada.

Twenty-five years ago the U.S. newsprint output representing nearly 49 per cent of the North American total was by a very slight margin larger than that of Canada, while in 1949 its proportion of a continental aggregate more than 90 per cent greater than in 1925 had dropped to a little less than 15 per cent.

Canadian production in 1949 was nearly 132,000 tons or 3 per cent in excess of the previous high record made in 1948, and 589,000 tons greater than in 1946. The 62,000 tons or 16 per cent increase over the preceding year in Newfoundland's output also resulted in a new all-time peak. United States production in 1949 recorded a gain of 32.000 tons or approximately 4 per cent over 1948 and also exceeded that of any year since 1942 while the coming into production of the new mill at Coosa Pines, Ala., could result in increasing this country's output of newsprint to the 1,000,000 ton range in 1950. Taking production a quarter of a century ago as equalling 100 the 1949 indexes stand at 311 for Canada, 458 for Newfoundland and 59 for the United States.

In 1949 the newsprint paper industry as a whole operated at a rate in excess of estimated theoretical capacity. This was the third successive year wherein the ratio of operations to the constantly increasing theoretical capacity of the industry exceeded 100 per cent and was in marked contrast to the low levels prevailing in the years 1931-1933 when the average was only about 57 per cent.

Shipments

Of the newsprint tonnage produced on this continent in 1949 all but 14,000 tons went into the channels of distribution. Total shipments from the mills amounted to 6,062,000 tons and were 228,000 tons or 4 per cent greater than in 1948. Shipments made by Canadian producers totaled 4,737,000 tons and exceeded production by almost 5,000 tons while those of the United States manufacturers were 898,000 tons or 2,000 tons less than the quantity produced and the 427.000 ton movement from Newfoundland mills did not equal their output by 17,000 tons.

Tonnage held by all producers at the end of December last year aggregated 132,000 tons and was 12 per cent greater than mill stocks at the end of 1948 and 30 per cent more than in 1947. However, the quantity was smaller than on the same date in 1946 and 1945 and about 30 per cent less than the 1935-1939 average.

EXPORTS

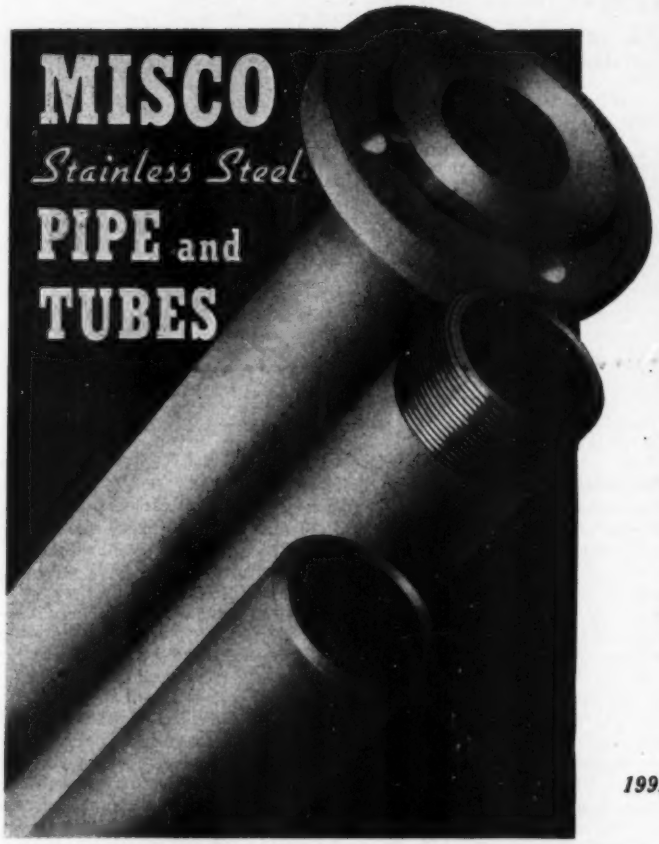
Official reports emanating from the Dominion Bureau of Statistics indicate the exportation of approximately 4,705,000 tons of newsprint from Canada in 1949. Since this total includes exports from Newfoundland from the time the former British Colony became Canada's newest province it is necessary to add thereto the shipments made by the mills there during the first quarter of last year in order to complete the export picture. Thus we find that 4,798,000 tons of newsprint paper went to destinations beyond the borders of Canada and Newfoundland in 1949.

The record high exports from Canada and Newfoundland in 1949 were 95,000 tons or 2 per cent greater than in 1948 and 1,725,000 tons above the war-time low of 1943. Of the total tonnage exported, 4,354,000 tons or 91 per cent was shipped to the United States with the balance of 444.000 tons going to destinations elsewhere throughout the world. The increase over 1948 in exports to the United States amounted to 190,000 tons while the quantity going to overseas markets—reflecting exchange difficulties in various countries—declined by 95,000 tons from the preceding year and in percentage of total was, except for 1942, smaller than at any time during the period covered.

According to the Department of Commerce nearly 39,000 tons of domestically produced newsprint were exported from the United States in 1949. Exports from this country had remained stationary at 28,000 tons during the years 1946-1948 so that the increase last year was rather unanticipated and in view of the decline in shipments from Canada and Newfoundland to overseas destinations is somewhat of a paradox.

The most important overseas markets for United States newsprint in 1949 were the Philippines to which went 15,000 tons or 39 per cent of the total, Mexico taking 12,000 tons, and South and Central America the destinations for more than 4,000 tons and somewhat less than 2,000 tons respectively.

(*) Abridged



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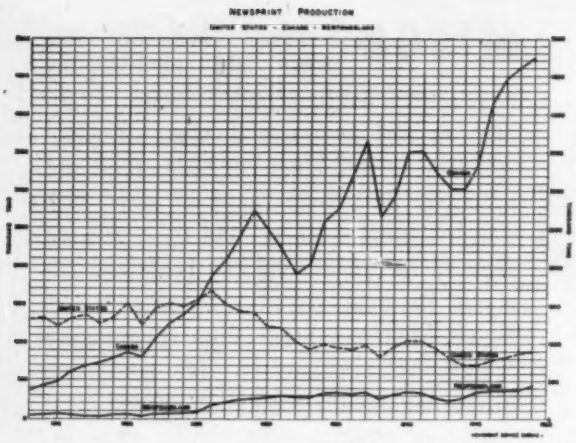

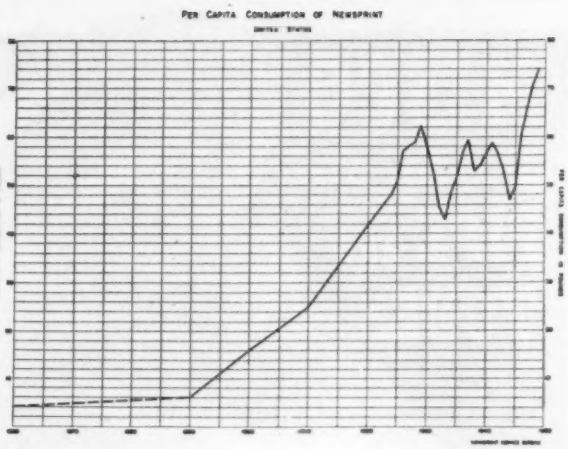

Compared with 1948, there were increases of 8,000 tons in shipments to the Philippines, 3,000 tons to South America and 1,000 tons to Mexico.

The North American newsprint industry as a unit last year exported 483,000 tons of paper to other parts of the world or 84,000 tons less than in 1948 and except for the war depressed shipments in 1943 and 1942 they were below those of any year since 1933.

IMPORTS

According to Department of Commerce reports only just recently released from Washington, imports of newsprint paper into the United States in 1949 from all sources totaled 4,637,000 tons and amounted to more than 5 times the domestic production. The hitherto peak imports of 1948 were exceeded by 244,000 tons or 5½ per cent while the increase over 1945 imports was not far from 2,000,000 tons. Imports from Canada in 1949 were at a record high level of 4,111,000 tons and the 271,000 tons imported from Newfoundland also represented a new high from that source while the 255,000 tons of European newsprint that entered this country did not equal 1948 imports by nearly 13,000 tons.

Imports from Europe in the first quarter of 1949 were at a rate which had it been maintained throughout the year would have surpassed the 1939 peak by an appreciable margin. However, the 30,000 tons a month rate attained in the first three months declined to a monthly average of only 18,000 tons in the last three quarters of the year. Of the overseas total, nearly 60 per cent or 151,000 tons was supplied by Finland while Sweden contributed 37,000 tons, the United Kingdom 35,000 tons and Norway 30,000 tons. The balance was made up of small quantities from France, Austria and the Netherlands. Compared with 1948, the largest quantitative increase—almost 32,000 tons—occurred in imports from the United Kingdom while those from Finland and Norway were greater by 20,000 tons and 2,000 tons respectively. On the other hand, there were decreases of 33,000 tons in imports from Sweden and of 26,000 tons from France. In view of announced commitments for the current year with respect to domestic and other markets — not including the United States—it is possible that a smaller quantity of European newsprint will be available for export to this country in 1950.

CONSUMPTION

Despite less pronounced upward trends than existed in 1948 in most major factors influencing the use of newsprint paper, consumption thereof in the United States in 1949—unaffected by inadequacy of supply for the first time since 1942—continued to expand with both tonnage and percentage increases approximating those of the preceding year. As has been the case since the end of the war consumption in this country in 1949 was considerably greater than that in the rest of the world combined.

The publishers reporting to the A.N.P.A. used 4,257,000 tons of newsprint during 1949—an increase of 6 per cent over the quantity used in 1948 and 19 per cent more than in 1947 while the war-time low consumption of 1944 was exceeded by 1,906,000 tons or 81 per cent.

It is presently estimated that the A.N.P.A. publishers used 77 per cent of the newsprint paper consumed in the United States in 1949. On the basis of this assumption the indicated use by all consumers amounted to 5,529,000 tons and exceeded the hitherto all-time high of 1948 by 388,000 tons or nearly 8 per cent. Compared to the average prewar consumption level during 1937-1941 the increase in 1949 amounted to 1,829,000 tons or nearly 50 per cent. The 8 per cent rise in total consumption in 1949 compared with the 6 per cent increment in use by the A.N.P.A. publishers indicates a greater relative increase in usage of newsprint by consumers other than the large metropolitan press and constitutes a reversal of the postwar trend.

The 1949 per capita use of slightly more than 74 pounds of newsprint paper was not quite 4 pounds greater than in 1948 and nearly 8 pounds more than in 1947, while compared with 1946 the increase was in excess of 13 pounds. The figures in the two right hand columns of the table show that while the consumption in tons index had exceeded that of the base period in four different years prior to 1947 it was not until then that the pounds per capita index rose above 1929.

The apparent per capita consumption of paper and paperboard in the United States in 1949 is estimated to have been 331 pounds, of which newsprint comprised approximately 22 per cent. It has been estimated by the American Paper and Pulp Association, based on long-time trends in per capita consumption and Bureau of Census forecasts of population, that by 1965 more than 35,000,000 tons of paper and paperboard will be consumed in this country. Should this prove to be so—the presence of a considerable element of uncertainty is conceded—and newsprint paper represent the same proportion of the total as in 1949 —also highly conjectural—a more than 7½ million ton use in that year is indicated.

OUTLOOK

On the assumption that past experience in similar circumstances is a valid criterion, it is the opinion of some observers that the unanimity prevailing among almost all business analysts and economists in forecasting good business in the United States during the first half of 1950, justified acceptance thereof subject to some reservations.

Thus far in 1950, however, predictions of high-level over-all business activity have proved to be correct. Should the uncertain factor due to the deteriorating coal situation be eliminated before it can cause serious damage to the general economy—toward which objective official efforts at long last are being directed—maintenance at this high rate in the near future would appear to be indicated and should be reflected in a continuing strong demand for newsprint paper.

▶ PALLET TRUCK BRAKE—Combination of brake and bumper for lightweight pallet truck consists of a curved steel plate which is welded to the bottom of the towing handle. When handle is raised, plate extends out in front of the truck and acts as a bumper if truck is run up against a solid object. Holding handle down brings plate in contact with the floor for braking action. Lyon-Raymond Corp., 8061 Madison St., Greene, N.Y.

▶ DUST COLLECTOR—Valmont Type S Collector incorporates a longer tube of relatively small diameter and has just one carefully proportioned inlet slot for flue gases. Tubes are nested close together, so that gases are guided to the inlet slot by the contour of the adjoining tube. This sets up an "S" shaped path which improves aerodynamic flow of the gas, resulting in greater collection efficiency and use of fewer tubes to handle a given quantity of gas. Prat-Daniel Corp., East Port Chester, Conn.

Review of 1949 In the Unbleached Kraft Paper Industry

DERNELL EVERY, Secretary
Kraft Paper Association, Inc.

▶▶▶ THE KRAFT PAPER manufacturing industry enjoyed the third largest year of business in its history in 1949. Only when one makes comparisons with such bumper years as 1947 and 1948 does 1949 appear of moderate size. In this respect, it must be remembered that when comparisons are made with 1948 we are using a record high year during which practically every machine in the industry ran full throughout the twelve-month period. Ideal operating conditions of that type for any industry are not frequently duplicated. 1949 production, therefore, although approximately 1,900,000 tons, represents a 12% decline from the record established in 1948. The same is true for orders and shipments.

Detailed records of kraft paper production are available for a 16 year period. The year just completed was one of only three years in that entire period (which contained a recession and a world war) in which kraft paper production declined from the previous year. How this occurred in 1949 perhaps requires explanation,

A chart of kraft paper production during 1949 would prove very similar to a chart of the Federal Reserve Board's Industrial Production Index, with which most manufacturers are familiar. The industry was operating practically at capacity at the start and at the end of the year, but in the middle of the year suffered a recession in its business which closely resembled events which took place in a large cross section of American industry. In other words, what happened in the unbleached kraft paper industry during 1949 was typical of what happened in most other nondurable goods industries. Inventories had been gradually built up among the industry's customers from early in 1948 until they reached a point in the spring of 1949 when almost simultaneously these customers became apprehensive concerning them. Orders fell off and the manufacturers had only their unfilled orders file to fall back upon for a period of about four months. The industry never does carry a very large file of unfilled orders and, consequently, a lack of orders almost immediately reflected itself in sharply reduced production. This condition prevailed for about three months during which time the industry's customers liquidated their inventories and again began placing orders in normal volumes. Many customers even over-waited the proper buying point and were themselves short of stocks for their own operations during the fall. As previously mentioned, the industry closed the year operating practically at capacity.

Although it required four years to bring it about, a postwar inventory adjustment has now been completed. We have entered 1950 with "normal" inventories in the hands of our customers and with the production and consumption of our products in better balance than has been the case in several years. Industrial activity, as a whole, remains strong with a forecast for greater unit sales by nondurable goods stores in 1950 as compared with 1949. Kraft paper is an essential material for packaging these nondurable goods.

In recent years there has been an acceleration in the growth of population as a natural result of higher birth rates and lower death rates. Present population is approximately 150,000,000, a figure the United States had not been expected to reach for another ten years. More people mean more retail sales which add to demand for kraft paper for packaging purposes.

In summary, we foresee a good year for the industry in 1950. It should be considerably better than 1949, and, possibly, could prove equal to the record year of 1948.

▶ FLOOR COATINGS—An acid-resistant coating for floors, walls, and machinery known as Stonhard Stoncote is a protective coating that can easily be applied to all maintenance areas or wherever corrosion is a special problem. May be applied with either a brush or a spray. Available in several colors. Stonhard Co., 300 Stonhard Bldg., 1306 Spring Garden St., Philadelphia 23, Pa.

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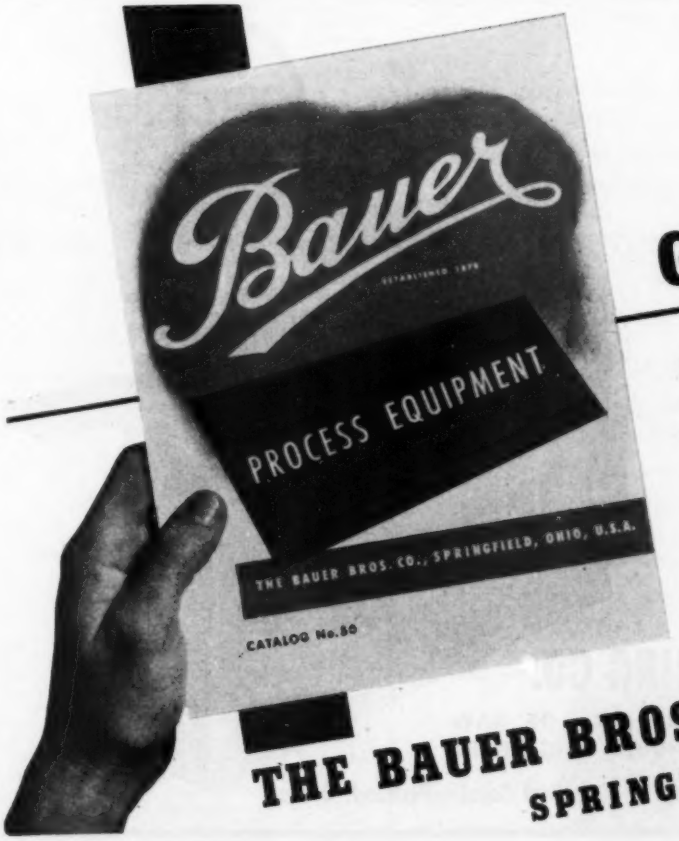

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TAPPI Abstracts

The Operation of the Multiroll Beater-Refiner in a Southern Kraft Mill, by Milton R. Roberts, Hudson Pulp and Paper Corp., Palatka, Fla. (Alkaline Pulping Session)

The introduction covers the refining process as a matter of review with attention called to the fact that beating is usually considered a different operation from a continuous refining system employing jordans, etc. Beating covers the batch method of treating stock, whereas the continuous system is of a design to treat stock on the first pass through the refining equipment. Additional engines used in series accomplish the task. It is the purpose of the paper to show from operating date and photomicrographs that it is possible to treat fiber to the same extent as jordans and similar refining equipment with greater control and savings on power and maintenance by using the multiroll beater type refiner as a continuous system. First commercial installation of the new Noble & Wood Machine Co. multi-roll controlled Flow Victory Beater was completed last August at the Palatka, Fla., kraft mill of the Hudson Pulp & Paper Corp.

The beater type refiner is a triple roll beater in which the stock is treated continuously. The control is maintained through pressure adjustments of the bedplates. In the conventional batch system the bedplate is stationary with a small amount of roll pressure adjustment. In the triple roll beater the bedplates are supported during operation by six cylinders having from 0 to 300 psi pressure. Pressure variations have direct bearing on the effect of treatment. The stock flow is introduced through flow spreaders in front of the first roll. This level is constant during operation and safety features are incorporated in the design to prevent damage to the rolls or bedplates in event of flow failure.

Tests conducted over a 6-month period of operation show the beater to have the effect and flexibility for which it was designed. During the period of operation no apparent signs of wear are shown on the bars and no downtime was recorded due to maintenance. The bedplates can be reversed if necessary. This feature is expected to allow operating time to be double that of a bedplate which would remain in the same position until completely unfit for use.

Design of the beater has incorporated an oscillating roll for the prevention of grooves in either the roll or bedplates. Tests have shown this feature to have direct bearing on freeness of the stock treated and the quality of the stock from the standpoint of bursting strength.

Data are given to substantiate the increase of quality due to the beater and data from paper machine records prior to and after beater installation show difference in quality of paper made from beater treated fiber. Photomicrographs are shown as an aid in detecting the treatment variation at different pressures of the bedplates. Micrographs of untreated and completely treated stock are submitted for comparison.

The Manufacture of Chemigroundwood Pulp From Hardwoods, by C. E. Libby and F. W. O'Neil, N.Y. State College of Forestry, Syracuse, N.Y. (Semichemical Pulping Session)

A process has been developed for converting aspen, birch, beech and maple woods into mechanical pulps which may be substituted successfully for spruce mechanical pulps in most grades of paper. It is proposed to identify this new type of wood pulp by the coined name Chemigroundwood.

The chemigroundwood process consists of a mild chemical pretreatment of the wood in block form followed by mechanical defibering in any conventional wood pulp grinder. Chemigroundwood pulp is manufactured more successfully from hardwoods than from softwoods since the coniferous woods do not respond as favorably to this type of chemical treatment. The treated hardwood is ground with one-half to two-thirds the power and at double the production rate of spruce groundwood. The pulp itself is three to four times as strong as ordinary spruce groundwood, standing intermediate in this respect between spruce groundwood and unbleached sulphite pulp. The chemigroundwood process gives pulp yields ranging between 85 and 90 per cent of the weight of the original wood.

Most species of hardwoods give chemigroundwood pulps which may be bleached with peroxide or calcium hypochlorite to the same final brightness as spruce pulp and at no greater cost. The high density of the principal hardwoods results in pulp yields that exceed the average yield from the conifers by at least 700 pounds per cord of wood. The value of this additional pulp is several times as great as the cost of the mild chemical pretreatments which are an essential feature of this new pulping process.

The Northeastern states have abundant resources of hardwoods that are available at relatively low cost compared to the softwoods. The ample supply of these woods, plus the tremendous advantages in quality and yield of fiber by the chemigroundwood process, presents to the paper industry of this region an unprecedented opportunity to reestablish the manufacture of wood pulp from native woods on a sound economic basis.

A Stain For Use in the Microscopy of Beaten Fibers, by Francis L. Simons, Crane & Co., Dalton, Mass. (Papermaking-Fourdrinier Session)

The study of papermaking fibers during the beating cycle is made much more convenient by the stain described. Two direct dyes are used, a blue of Color Index No. 518 and an orange of Color Index No. 621. They are applied in water solution at 60 C. to fibers mounted on the microscope slide in the usual manner. Unbeaten fibers are colored blue whereas beaten fibers are dyed wholly or partly orange depending on the degree of beating.

Fibrils are stained orange and broken or bruised spots on the fibers are also orange while the remainder of the fiber is blue. A "broomed" end stains orange with gradual

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transition to the blue of the rest of the fiber. The effects of beating can therefore be followed closely and an over-all estimate of the degree of beating made from the relative amount of orange coloration present. The method is equally applicable to slush pulp or to defibered samples of finished paper. It is also relatively independent of cooking and bleaching conditions and gives the same results with such widely differing fibers as bleached cotton and unbleached sulphite.

Developments in Methods of Treating Strawboard Wastes, by Don E. Bloodgood, Purdue University, Lafayette, Ind. (Fibrous Agricultural Residues Session)

In introduction, the previous work on the anaerobic digestion of strawboard wastes is discussed and the conclusions are given. The next step in studying the problem was the designing of a pilot plant. The necessary considerations that must be taken into account in designing, locating, and constructing a pilot plant are pointed out. In order to conserve digestion tank capacity it was decided to treat only the rotary-beater-washer wastes by the anaerobic process it being believed that the machine wastes would be about equal in waste concentration with the effluent from the anaerobic process.

The anaerobic digestion process was started with digested sewage sludge. The details of starting the process are given. The available waste to be treated had a B.O.D. of 3560 ppm as compared to a B.O.D. of 955 ppm for the total waste used in the laboratory tests.

The removal of total solids and B.O.D. obtained by primary sedimentation were 21.6 and 31.0% indicating quite effective treatment by sedimentation.

The digestion tank was maintained at about 33 C. which is approximately the average temperature of the waste being treated. The B.O.D. reduction amounted to 0.0475 lb. per cu. ft. per day with the production of an effluent with a B.O.D. of about 135 ppm. The main difficulty in operation has been the bulking of the sludge. This resulted in a problem in sedimentation in the secondary settling tank. This difficulty was not believed to have been caused by the accumulation of solids because data indicated no increase in solids concentration in the digestion compartments even with no wasting of sludge.

Laboratory tests have been conducted to determine the relative values of ferric chloride, aluminum sulphate, ferric sulphate and straw pulp as aids in filtering primary sludge. The indications are that all of these agents make the sludge filterable.

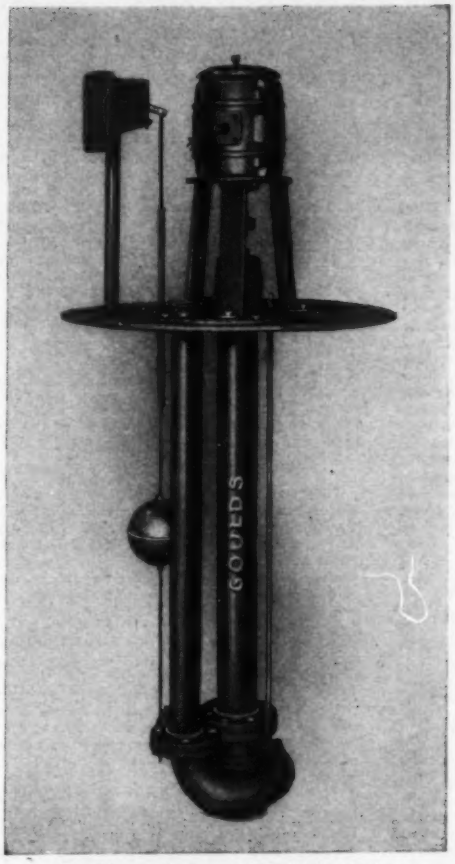
Mechanism of the Retention of Beater Added Urea Resins, by Manuel N. Fineman and I. J. Gruntfest, Rohm & Haas Co., Philadelphia, Pa. (Wet Strength Session)

Experiments described leave no doubt as to the importance of the ionic character of both resin and pulp to the mechanism of retention. There appears to be no reason to isolate the problems of urea resin retention from those of other beater additives such as rosin, dyes, fillers, and melamine resins.

Cationic urea resins are found to give high efficiencies even on thoroughly bleached pulps. Statements about the performance of urea resins as a class are shown to be precarious, however, unless both resins and pulps are defined in detail.

Processes Being Used in Europe for the Manufacture of Straw Pulp, by Joseph E. Atchison, Economic Co-operation Administration, Washington, D. C. (Fibrous Agricultural Residues Session)

This paper discusses observations made by the author during a 5-month survey of the pulp and paper industry of seven of the western European countries. During this time an investigation was made of the present and potential utilization of straw in these Marshall Plan countries. A complete discussion is given of the elaborate straw preparation and cleaning equipment which is used by many of the European mills. The pulping processes discussed include both those in which conventional digesters are used and the various continuous processes in use in Europe. Processes being conventional digesters include the traditional lime process, the soda and sul-



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phate process, and the monosulphate process. Continuous processes include the Celdecor, Pomilio, Huguenot, and others. One unusual process discussed which does not fall in either of these categories is the Marsoni cold caustic process being used in Italy.

A Laboratory Corrugator for 9-Point Medium, by Norval F. Wilson, Alton Box Board Co., Alton, Ill. (Fibrous Agricultural Residues Session)

A working model of a laboratory-type corrugator was built and samples of corrugated board were produced using the same paper that was run on a commercial corrugator. The operation of the laboratory device involves the formation of flutes from a metal plate replica of single-face corrugated board. An electric heating unit provides suitable temperatures. Samples produced with this device always have perfect flute formation. The laboratory tests therefore show optimum quality on the medium used. Some special paper samples have given much higher flat-crush tests than any produced commercially. The effects of moisture in the corrugating medium, the degree of moldability under higher temperatures, the influence of adhesive formulations, and other factors which enter into the production of better corrugated board are being investigated. A new model of the laboratory corrugator will be demonstrated.

Permanence of Wet-Strength Paper, by C. S. Maxwell, and W. F. Reynolds, American Cynamid Co., Stamford, Conn. (Wet Strength Session)

The permanence of wet-strength paper is discussed from two angles (1) permanence of the wet-strength properties and (2) permanence of the paper itself. The factors mentioned that affect the permanence of the wet-strength properties are: nature of the wet-strength agent, pH of the paper during storage, temperature and humidity during storage, degree of cure of the wet-strength agent, and action of microorganisms. In regard to the permanence of wet-strength paper itself it is pointed out that many of the tests established for predicting the permanence of normal paper are unreliable when applied to the usual wet-strength papers. Tests that are affected are disperse viscosity, copper number, extracted pH, and folding endurance before and after oven aging.

Improved Straw Pulp for Corrugating Paper, by H. M. Sutcliffe and S. I. Aronovsky, Northern Regional Research Laboratory, Peoria, Ill., R. M. Wilkinson and W. D. Burnham, Central Fibre Products Co., Quincy, Ill., and W. A. Phillips and E. R. Carpenter, Terre Haute Paper Co., Terre Haute, Ind. (Fibrous Agricultural Residues Session)

A large number of experimental cooks were made on wheat straw varying the amounts and kinds of chemicals in an attempt to produce improved pulps for corrugating. This work was part of a co-operative program between the strawboard industry and the Northern Laboratory and was carried on with the active collaboration of personnel from several strawboard mills.

The chemicals used were lime, caustic soda, sodium sulphite, singly and in various combinations. The pulps prepared with caustic soda or sodium sulphite and with combinations of these two chemicals were distinctly stronger than lime-cooked pulps. The optimum results in this series of experiments were obtained with 6% NaOH, 10% Na_2SO_3, 2% NaOH plus 4% Na_2SO_3, and 2% Na_2SO_3 plus 4% Na_2CO_3. The results indicated that suitable refining of straw pulp may be fully as important as the method used in preparing the pulp. Because of its high hericellulose content, straw pulp is an excellent material for producing corrugating paper with high-crush resistance.

Neoprene Latex In the Paper Industry, by R. H. Walsh, H. H. Abernathy, W. W. Pockman, J. R. Galloway, and E. P. Hartsfield, E. I. duPont de Nemours & Co., Inc., Wilmington, Del. (Wet Strength Session)

The paper industry is familiar with elastomer latices mainly as saturants and adhesives and has not considered them as pulp additives except in a few cases where relatively large amounts of elastomer have been added at the beater to produce imitation leather-type products. Recently it has been found that paper made from pulp properly treated with small amounts of Neoprene latex Type 735 possesses a highly desirable combination of properties. Further, this latex can be used in larger percentages to produce products similar to those produced by saturation. The latex is added to the pulp by an exhaustion procedure. Details of the process are described. Data illustrating the high wet strength, good dry strength, folding endurance, and other properties of the neoprene treated paper are given.

Corrosion in Sulphate Pulp Digesters, by T. C. Johnson, Union Bag & Paper Corp., Savannah, Ga. Chemical Engineering Session)

A study of the corrosion problems experienced in twenty digesters at the Union Bag & Paper Corp. Savannah plant is presented. Although the original digester service was from 12 to 14 years, newer digesters installed in 1947 and 1948 appear to be corroding so rapidly that a life of 3 to 5 years is all that can be expected. All digesters have been operated under the same service conditions.

A procedure has been adopted for measuring the digester plate thickness using an "Audigage" manufactured by the Branson Instrument Corp. The thickness measurements are plotted and compared with previous measurements to determine the rate of penetration of the plate. A visual inspection of the surface condition is also recorded. Penetration rates of 0.025 to 0.040 inch per year are typical in the older digesters but newer units are corroding at rates varying from 0.075 to 0.143 inch per year.

The selection of replacements is difficult because of the lack of experience with alloys and carbon brick linings. In addition, the corrosion resistant qualities of carbon steel are obviously poorer now than previously. The problem of digester corrosion seems to be one which cannot easily be solved by one mill and calls for considerable additional study.

The Stacomizer—A Continuous Roller Press, by R. J. Chambers, Anglo-Canadian Pulp and Paper Mills Ltd., Quebec., and K. C. Logan, Northeastern Paper Products, Ltd., Quebec, Que. (Chemical Engineering Session)

A novel type of hydraulically actuated continuous roller press has been invented, constructed and tested. This Stacom press or Stacomizer is novel in design possessing a free floating ring which runs between two rolls. The material being pressed passes between the inner roll and the inner surface of the ring. This design gives an acute angle to the nip and permits pressures to be developed which would reject the feed in a normal type of press.

The initial commercial model was built to dewater bark and was subjected to a series of trials. The bark was discharged in a finely-divided state suitable for conveying or burning, and generally possessed a moisture content of 50 to 55%.

Feed rates varied with the slipperiness of the bark and averaged about 70 tons of moisture-free material per 24 hours. Rates as high as 120 tons were secured, but with very slippery bark the feed rate dropped to 40 to 50 tons.

The Instron Tensile Tester, by George S. Burr and Harold Hindman, Instron Engineering Corp., Quincy, Mass. (Wet Strength Session)

A description is offered of the newly-developed Instron tensil tester which makes use of electronic principles in weighing of the tensile forces and in controlling the sample extension with the load-elongation data plotted autographically. The design of the instrument is such as to make it suitable for the sensitive measurement of a wide variety of materials, of which paper is a prominent example. A discussion is presented of certain techniques available for the evaluation of the various physical characteristics of paper, including the tensile strength, yield point, elastic modulus, energy absorption, and creep properties.

The Softening Mechanism of Paper Plasticizers by P. E. Nethercut, Watervliet Paper Co., Watervliet, Mich. (Wet Strength Session)

Although softening agents have long been employed in the paper industry to produce more flexible sheets, the nature of the plasticizing mechanism is still not understood. The present study is concerned with the effect of plasticizers on individual fibers. An instrument has been developed for measuring the flexural rigidity of fibers and filaments and also of paper sheets. Wood fibers proved too short to be used in this

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test, and, therefore, Cordura filaments and ramie fibers and sheets were employed. The effect of water, ethylene glycol, glycerin, sorbitol, urea, and calcium chloride was investigated. The stiffness of the individual fibers is probably not highly significant in determining sheet stiffness, especially in the plasticized sheet, although this could not be definitely demonstrated experimentally.

The Role of the Chemical Engineer in the Pulp and Paper Industry, by G. W. E. Nicholson, Union Bag & Paper Corp., New York, N. Y. (Chemical Engineering Session)

Until fairly recently, about ten to fifteen years ago, the activities of the chemical engineer and the chemist were largely limited to the laboratory, testing raw materials and samples of chemicals from the processes as well as samples of pulp and paper. In those days he did not participate very actively in the actual operation except in a more or less advisory or service capacity. However, in recent years a greater appreciation of the importance of the graduate engineer's knowledge developed with the results that they have contributed materially to the progress of the pulp and paper industry.

It is believed that the chemical engineer has a tremendous field open to him. However, a plan should be worked out so that he may obtain practical experience as well as being able to contribute to the welfare of his company. Such development plans as well as opportunities for the chemical engineer are discussed.

Convention Papers

Fabricating Quality and Performance Into Corrugated Shipping Containers*

A. O. PARSON
Longview Fibre Co.

Quality and performance in corrugated containers are no longer considered problems for board manufacturers alone. New and improved testing equipment and technique definitely has placed the responsibility for quality and performance onto the converter. This responsibility, coupled with more rigid specifications set up by container users and shippers, has forced the converter to become very fabrication-minded.

Corrugated containers and combined board are subjected to some 12 different tests. Some tests are set up by the container user, some by shippers and ICC regulations, and still others by the converter himself.

Naturally, the protection of the product within the container is of primary importance; therefore, the ability of the container to withstand rough treatment in shipping and warehousing is determined by the following tests: mullen, compression, puncture (inch ounces per tear inch), crush, drum, drop, score tear, impact, and adhesion. There are other tests which do not necessarily measure performance but are important insofar as quality containers are concerned. They are weight, caliper, and moisture.

Uneven moisture content in a roll makes that roll very difficult to condition. The dry portion must be treated differently than the wet portion to get uniform flute formations and proper adhesive distribution. Rolls

(*) Abridged from address given before the joint meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry and the Pacific Coast Division of The American Pulp and Paper Mill Superintendents Association, Inc., held on December 6, 1949, in Longview, Wash.

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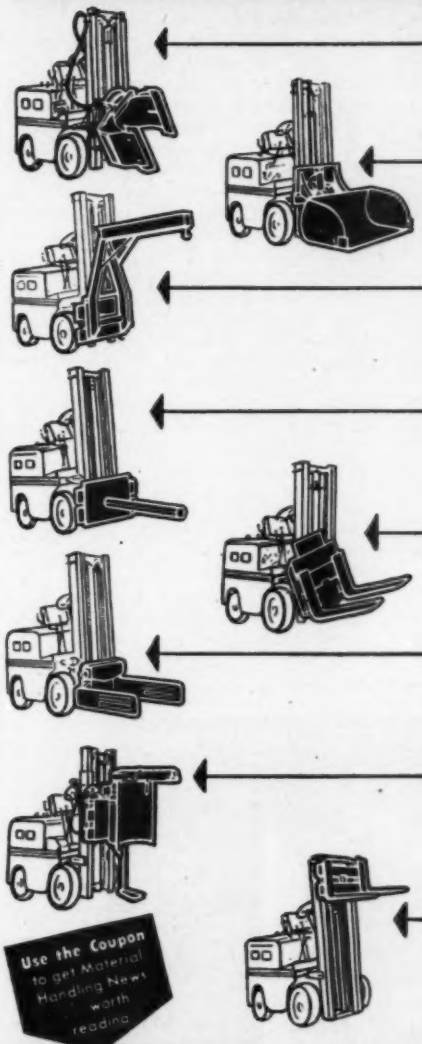

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AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

of 9 pt. should be round and tightly wound because flat rolls cause uneven pull, thus resulting in poor flute formation. Caliper of the 9 pt. also must be uniform for good flute formation. Proper density and finish of the sheet are necessary to secure the desired preconditioning effect.

Quality at the corrugator is essential. Compression and flat crush tests results have their origin in flute formation and adhesion. Uniform flute formation and good adhesion are achieved by proper conditioning, tension, finger settings, adhesive and corrugating roll settings, and the adhesive itself.

By proper conditioning is meant the making of the 9 pt. soft and pliable so that uniform corrugations are formed with the adhesive being applied to all flutes. This conditioning is done by the injection of steam and heat in relationship to the existing condition of the 9 pt. If the 9 pt. is wet, heat with little steam is needed. Nine-point that is too wet or too dry tends to stick in the corrugating rolls. Such sticking causes some flutes to not contact the glue roll and results in skips in adhesion. Tension affects flute formations as well as distribution of adhesive onto the flutes. Dry rolls normally require more tension than wet rolls.

Finger settings, which are probably the most important settings on a corrugator, must be set and adjusted very carefully. Once the correct setting is achieved, no changes should be made until all other adjustments fail to produce results. Improper finger settings will result in dry streaks having no adhesion, in heavy finger lines (the most common cause of failure in compression tests) and in badly formed or damaged flutes.

Adhesive rolls must be set to give even distribution of adhesive with just enough adhesive applied to produce the bond required. Also, care must be used to prevent the building up of adhesive on the corrugating roll. Corrugating rolls once set should require very little adjusting. Rolls, however, should be kept clean and free of all foreign material. Steam pressure within the rolls must be maintained high enough to insure good flute formation. Syphons for ridding the rolls of water must be adequate and in good working order. Cold corrugating rolls are often responsible not only for poor flute formation but for poor adhesion as well. The 9 pt. has a tendency to stick to cold rolls and will not fluff out to contact the glue roll.

Two types of adhesives are used on corrugators; namely, silicate and starch. Both types have their respective merits, silicate generally being considered superior for producing high crush and compression test. Starch, on the other hand, has the advantage insofar as moisture conditions are concerned. A container subjected to high moisture conditions in use and in storage tends to hold its rigidity better if starch has been used.

On pressure-type corrugators, one other setting, that of the pressure roll, is of primary importance. It is at this point that the 9 pt. is contacted by the top or inside liner. As the contact is a fraction of a second in duration, pressure must be severe in order to achieve setting of the adhesive. However, excessive pressure, or uneven pressure, will fracture or cut the liner and the 9 pt., resulting in a lowering of almost all tests to which the combined board and containers are subjected.

Board combined at the pressure roll point is known as single-face. Such board, as it passes to the next operation, the double back glue station, must be watched closely. The sheet must pass over and under guides and rolls which will tilt or crush the corrugations if care is not used.

At the glue station, as the adhesive is being applied, the setting of the rider roll should be just heavy enough to cause the flutes to come in contact with the glue roll. The flutes should not be crushed or knocked down. The liner, the bottom or outer liner, applied here, must be unwound with proper tension to prevent end warp.

Preheaters at the glue station for both the liner and single-faced sheet are important in warp control. The platens, or drying section of the corrugating unit, must be of sufficient length and heating capacity to properly set the adhesive.

Platens over which the combined sheet travels must be kept smooth and clean to prevent scuffing or marking of the board. Also, belts which hold the board on the platens and pull the sheet through the machine must be uniform in thickness. Such belts are required in order to properly force the single-faced sheet onto the bottom liner so that all flutes come in contact with that liner and are held there until the glue is set.

It is at the glue station that the "hi-lo" flutes show up, with the "hi" flutes only, adhering to the bottom liner. These skips in adhesion materially lower the compression test, particularly if the skips are near scores or corners of a container.

As the combined board emerges from the double-facer, another cycle of fabrication is entered into, that of slitting and flap scoring. If slitter knives are kept sharp and properly set, clean edges are no problem. Scores of correct profile properly set, are very important in achieving high top to bottom compression test at low deflection. Male and female scores must be in perfect alignment to prevent cutting.

The final operation of the combining machine, which is the taking off and stacking of the blanks, also can affect quality and performance. Rough handling, at times, will break the adhesive bond, mark the sheets, and, in extreme cases, crush the corrugations. Poor stacking, with edges and ends not straight, causes warp and poor adhesion. Tiers of blanks piled too closely together do not allow for ventilation; consequently, if loads are subjected to a cool atmosphere, sweating occurs and the adhesive bond is broken. Every other handful of blanks must be turned over as it is stacked to prevent warping.

Quality printing is contingent on impression, register, and ink coverage. Enough impression must be applied to prevent smear and offset, but not enough to crush the corrugations to a point that poor test results are obtained. To obtain register, it is necessary to hold the blanks securely as they pass between the feed rolls and pull rolls. The setting of these rolls must be correct to prevent slipping and crushing. Ink cover-

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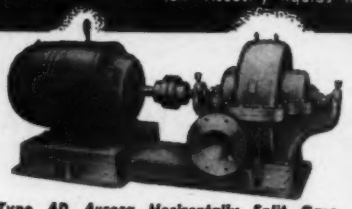

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age, while not affecting performance, does affect appearance. The adjustment of ink rolls and ink flow is very important. Correct choice of printing dies aids materially in achieving all requisites for good printing. Hardness of the dies must be of proper durometer to accomplish good coverage without excessive impression.

Aside from actual printing on the printer slotter, the scoring and slotting done in this operation require their individual shares of attention. Scores, here too, must be of proper profile; and set to insure a good square fold, yet not cutting the liner. The top score must be centered with the bottom score to prevent folding erratically. Dimensions as to the box size must be checked carefully to assure a good fit of the contents for which the container is made. Slotting must be done with sharp knives to prevent ragged edges. The top and bottom slotter heads must be set close enough together to hold the blank firmly between slots, being very careful to prevent crushing.

With the advent of modern automatic equipment for joining, chance for damage at this point has increased. Folding equipment for either tapers or stitchers makes it necessary for the blanks to pass between feed and pull rolls—always a crushing menace. Folding and squaring devices must be watched and set carefully to prevent damage.

Taping machines proper have their own damage points, such as crushing at pull rolls and conveyor belts. The conveyor belts probably are guilty of more crushing than in any other part of the tape machine. Setting the top belt down onto the lower belt often overcomes such taping faults as slippage, poor adhesion and variation in tape application. In some cases, however, crushing continues to occur. So this practice must be supervised closely.

Care and Use of Chipper Knives*

C. B. NEWELL
Field Engineer
Simonds Saw and Steel Co.

A chipper knife is one of the most abused of all cutting tools, and there are a number of reasons why they do not always give the best results. The most important reason is improper grinding. This being true, your chipper operation is no better than the knives you use, and they are no better than your grinding.

It should be recognized that the best knives in use today, made of the finest possible alloy steel and with proper heat treating, can easily be spoiled in a few seconds at the grinder.

Good grinding is a responsibility of the management, which must do its share by providing knife grinding equipment capable of doing the work necessary. The type or make depends somewhat upon the particular plant, how many knives are to be ground a day, and what other type of knives are to be ground or could be ground on the same machine, such as paper knives, slitter knives, stop cutters or doctor blades.

(*) Abridged from paper given at the national convention of the American Pulp and Paper Mill Superintendents Association, held at Atlantic City, N.J., June 17-20, 1949.

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Proper personnel should be assigned this specialized job and taught how to grind knives properly. It is essential to find the proper grinding wheel specification, and to insist on its being used and not changed every few wheels (as is quite often done) to cut down on the cost of the wheels.

Grinding Machines

There are two types of knife grinders:

A. The knife is held on a knife bar attached to a table which slides on ways back and forth in front of the grinding wheel. This is either direct or bolt driven from an electric motor which forms part of the head of the machine and remains stationary.

B. The other type consists of a table and knife bar which are stationary; the abrasive wheel motor and head are set on ways and slide horizontally by the knife.

The length of machine to be bought depends on many factors. For chipper knife grinding only, a knife bar long enough to hold a half set or 5 knives at a time is advisable. This will help hold the balance of knives on chipper. This would normally make the machine not over 150 in. long. Beyond this length, the abrasive wheel in grinding high carbon-high chrome wears or breaks away faster than the steel, making feed from both ends and in the middle necessary.

If it is desired to decrease the time in grinding, an electro-magnetic chuck is recommended which can be bought for most any grinder, saving a great deal of time in bolting on and unbolting knives from the knife bar.

Knife bars and tables should be designed heavy to avoid distortion. A rigid table, knife bar and base are vitally necessary. Green castings should not be used in the manufacture of any grinding machine. Knife bars may be trued up or faced by grinding. It is necessary to set the knife bar face vertical and straighten up the wheel so it will just grind on both edges. A very light cut should be taken and a proper wheel for grinding cast iron should be used. Watch for the wheel loading and heating the bar, which causes distortion. Coolant should not be used on cast iron.

Segmental grinding chucks are a good investment. Segments are cheaper than solid wheels, grind cooler, keep cleaner and generally grind faster.

Coolants for Grinding

Water is one of the best coolants that can be used, due to its properties of transferring heat from the steel to itself, but water also causes rust to the object being ground, which is not so important for chipper knives due to the special alloy steel used, but would cause trouble with paper knives or slitters. Moreover, water will cause rust on the grinder table, knife bar, and exposed parts, and wear out the machine in a very short time.

Soluble oils for grinding, added to water, do an excellent job. The soluble oil should be of the type specified for grinding applications. That is, it should emulsify in hard or soft water, should permit grinding dirt to settle, must be relatively stable and have good detergent or cleansing action. The latter property keeps the work, the grinding wheel and the machine clean so that stock may be removed accurately and rapidly.

The coolant pump and piping should be of ample capacity. Due to the abrasive material being pumped the pump impeller wears and the efficiency of the pump is lowered but there should still be sufficient volume for proper operation. Small pipe lines are a nuisance due to plugging, cutting off the coolant stream and burning the knife.

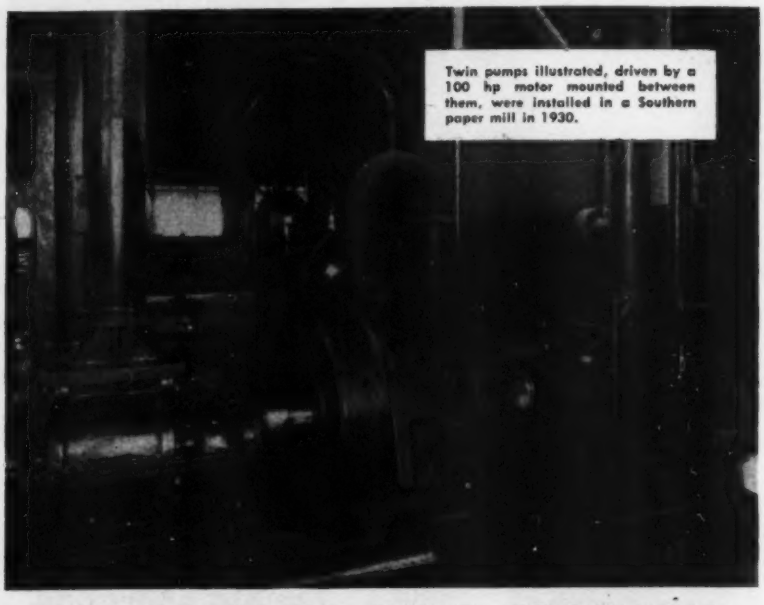
Coolant tanks generally supplied with a grinder seldom have sufficient capacity. A capacity of 40 to 60 gal. is an absolute minimum for safety and to allow time for settling. A tank of 80 to 100 gal. capacity or larger is advisable. A tray set on top of the tank, with baffles dividing it into sections, serves as a good dirt catcher and lengthens the life of the pump.

The grinding machine should be set on a heavy concrete foundation and insulated from the building, if vibration makes it necessary. The machine should be set in a well lighted and clean location so that there can be no excuse for not doing good work.

Insurance against burning is an important factor. To accomplish this result the grinding wheel or segments should be self-dressing. In other words, the grain should break away fast enough to expose new cutting surface as fast as the wheel dulls.

Coolant is used primarily to erode the dirt from the wheel to keep it cutting cool

(Turn to page 1482)


Twin pumps illustrated, driven by a 100 hp motor mounted between them, were installed in a Southern paper mill in 1930.

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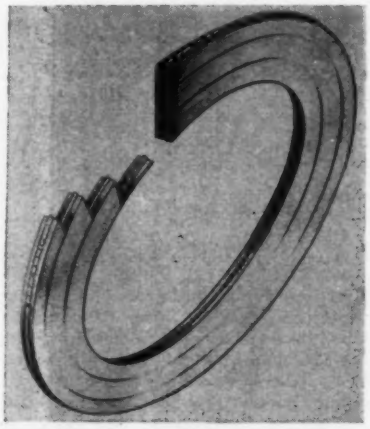
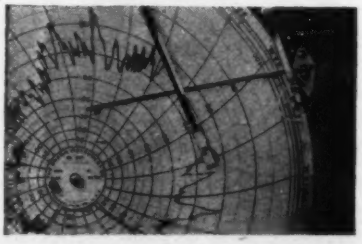


A flexible all-metal gasket for high pressure and high temperature applications is claimed to possess the qualities of solid metal without the rigid characteristics of ordinary solid metal gaskets. Even after extended service involving great changes in pressure and temperature, it is claimed that this new all-metal gasket has the resilience required to maintain a tight seal. The basic spiral-wound feature is used in the gasket, and several types of ferrous and non-ferrous metals are used in combination. Flexitallic Gasket Co., Camden, N.J.

Operation Pen

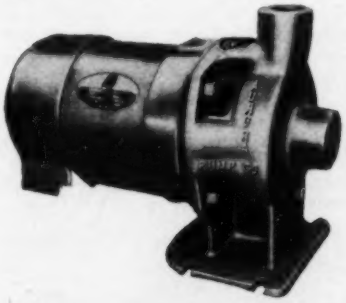
For use on circular chart electronic potentiometers.



A solenoid-actuated pen which avoids ink-throwing while providing speedy recording makes use of an amplifying linkage designed so that the solenoid's high velocity reaction is almost spent before the pen is picked up and moved. It is a V-type, holding a five-day supply of recording ink. It is claimed, by the engineers of this company, to be essential for thermal limit recording in continuous pasteurizing processes, for temperature measurements on tire presses or rubber curing and plastic molding, and for many other applications. Brown Instruments Div. of Minneapolis-Honeywell Regulator Co., Wayne and Roberts Aves., Philadelphia 44, Pa.

Pumps

Intended for a broad range of duties in general service.



Side suction, close coupled pumps are designed for small capacity (5 to 75 gpm), medium head (0 to 100 ft. head) duty—for operation at speeds from 1750 to 3500 rpm depending upon head and capacity required. Available sizes 1 in., 1¼ in. and 1½ in., in bronze fitted, all iron or all bronze construction. Aurora Pump Co., 110 Loucks St., Aurora, Ill.

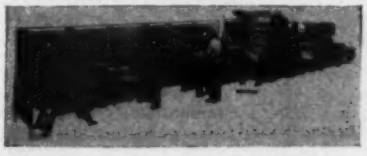
Photoelectric Control

Used for various inspection applications.

The new high speed sensitive photoelectric control Type 23LF3 is most generally used to maintain an accurate register of paper and cellophane which is being processed for bags and wrappers. Scanner of this unit consists of light source, phototube and amplifier tube in a single small housing. A common lens system is used. The control is designed to operate in any small sudden change or "bump" in the quantity of light which reaches the photoelectric tube. Photoswitch Inc., 77 Broadway, Cambridge 42, Mass.

Specialty Bag Machine

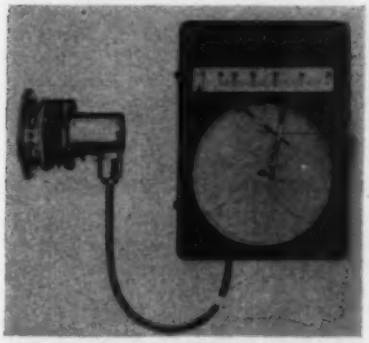
Makes siftproof multiwall specialty bags with self-opening square bottoms.



Included in the features of the Model 84 IRA bag machine is the patented double differential compensator and electric eye scanner for automatically locating a preprinted design in relation to the cut-off. The unit is outfitted for 4 to 6 hole adjustable punching for potato bags, staggered bottom slitting and/or slitting in the tube, code number printer, Farval "one-shot" lubrication system, lay shaft drives to cross posters and web slitters and others. Potdevin Machine Co., 1234-38th St., Brooklyn, N. Y.

Pyrometer

Claimed to produce a 99 per cent response to a temperature change in one second.



New radiation pyrometer is designed for indicating, recording or controlling temperatures up to 4000 F. in furnaces and kilns. It is mounted on the outside of the furnace or kilns, away from the hot zone, and picks up radiant energy emitted from the surface of the object under measurement. Actual surface temperature measurements of the work are thus obtained, rather than the usual furnace atmosphere temperatures. The Bristol Co., Waterbury 20, Conn.

Paper Roll Grab

Lift truck attachments facilitate loading and unloading.

A paper-roll grab for handling rolls of tightly wrapped paper cylinders ranging in diam. from 23 to 36 in. and weighing up to 1700 lb. consists of hydraulically controlled steel plates faced with rubber for non-slip retention. The clamshell bucket, for handling bulk materials such as sand, chemicals, insulating materials, etc., has a capacity of 7/16 cu. yd. It opens and closes by means of hydraulic power. The revolving apron attachment makes possible the turning over or dumping of lift truck loads by a hydraulic mechanism. It turns 180 deg. in either direction from the center. Hyster Co., Portland 8, Ore.

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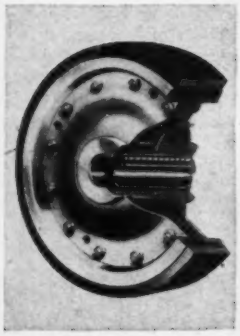

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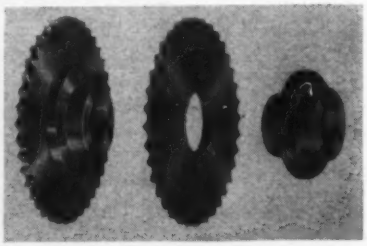
The floating skimmer is a scientifically developed device to achieve accurate, automatic blowdown of suspended and dissolved solids from a point at or near the water surface. It is constructed of stainless steel and consists of a shallow, adjustable trough 20 inches long by 5 inches wide by 2 inches deep, suspended between two 6½ inches dia. spherical floats, and having a screen mounted over the trough. Floats are guaranteed to withstand up to 1400 psi. Installation involves no complicated gauging, measurements or special tools. Boiler Specialties Corp., 608 S. Dearborn St., Chicago, Ill.

Hub Sprockets

Practically any speed ratio desired can be obtained.



The new style demountable hub sprocket is made up of a steel plate sprocket, bored and drilled, to which a machined cast iron hub is attached by heat treated cap screws. Bolt holes in the hub are threaded. Sprockets are interchangeable. Ft. Worth Steel and Machinery Co., 3600 McCart St., Ft. Worth, Tex.

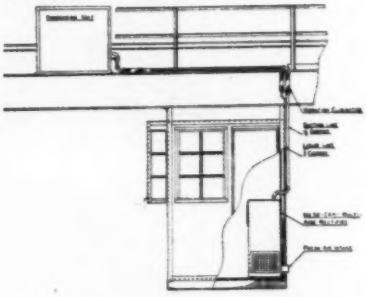
Chain Saw

Weighs less than 25 lb. complete with blade and chain.

A full 3 hp. logger's chain saw is designed for one-man use, and it is claimed the combination of power and light weight of this unit enables operators to obtain more board feet per man-hour in medium and small timber. The saw performs all types of sawing for logging operations, including felling, limbing, bucking and topping. Two straight-blade models are available, with 18- or 24-inch blades; a 14-inch bow saw, designed to cut small timber in any position or location without pinching or prying is also available. McCulloch Motors Corp., 6101 W. Century Blvd., Los Angeles 45, Calif.

Crane Cab Air Conditioning

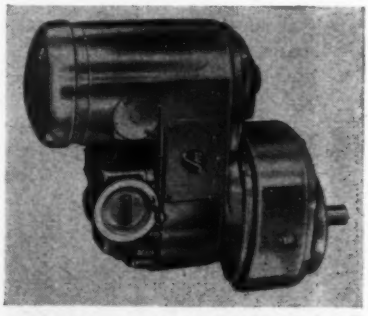
Temperature held at 80 F. with 50 per cent relative humidity.



Lintern Aire-Rectifiers are available in two models: the completely self-contained unit, which can be located entirely in the cab and is especially suitable when buying new cranes; and, the split unit model with cooling coil and filter equipment located in the cab and the condenser unit located at any convenient location on the crane. Both units are connected by refrigerant lines, suitably protected against vibration. It is claimed the use of this equipment invariably results in improved production and better working conditions. The Lintern Corp., Cleveland, Ohio.

Variable Speed Motor

Useful for agitator drives and for building into machines.



This company's Herringbone rotor, labyrinth seals, heavy duty ball bearings and new streamlined case is incorporated in the "Speed-Trol" vertical mounted motor. It is available with integrally built Sterling-designed helical gears. Another feature is the fingertip control of speed with the large, easy-to-read speed indicator allowing infinite speed adjustment through either the fingertip control on the motor or through mechanical, electrical, or lever-type controls. Sterling Electric Motors, Inc., 5401 Anaheim-Telegraph Road, Los Angeles 22, Calif.

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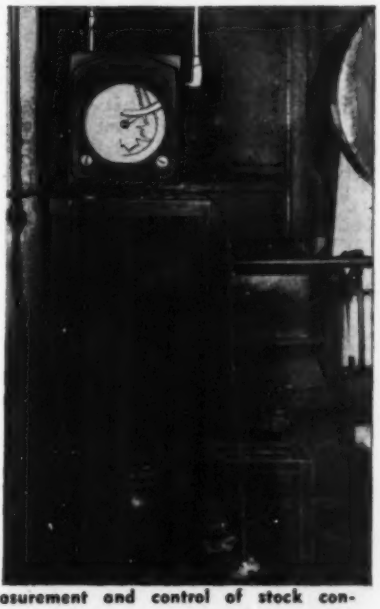

F&P Consistorator in the mill of the Mersey Paper Company. Jagged line on instrument chart is a record of dilution water valve action . . . smooth line is a record of controlled consistency.

Accurate measurement and control of stock consistency is a vital factor in paper quality. F&P CONSISTORATORS hold dry stock content of pulp within ± 1/10 of 1% in the operating range of 1.5% to 4.5%. Compensation for changes in consistency at the beaters, the Jordans and the mixed stock chest is continuous and automatic. (The pneumatic controller has 15-200% throttling range and automatic reset.)

Consistency changes are detected by a float. The bond between the float and the controller is magnetic, requiring no mechanical linkages. The eye-level chart provides a continuous record of water valve action and controlled pulp consistency. Alarm sounds when dilution water demand exceeds supply. Wetted parts are made from type 316 stainless steel. The first cost of the F&P CONSISTORATOR is low, and maintenance is negligible. Catalog 77 gives more details.

CLIP COUPON — MAIL TODAY!

☐ Please send me a copy of Catalog 77, "CONSISTORATOR Consistency Controller."

Name _____ Position _____
Company _____
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City _____ State _____

FISCHER & PORTER COMPANY
Dept. ON-IF **Hatboro, Pennsylvania**
PROCESS CONTROL INSTRUMENTS

Right Angle Drive Unit

Shaft extensions have dirt and moisture repelling oil seals.

The new stock right angle drive unit has special spiral bevel gears, case hardened and matched, and lapped in pairs after hardening. Both input and output shafts are 1¼ inch diameter and are mounted in precision tapered roller bearings. Capacity of these units is from 6 to 12 hp., depending on ratio. Available stock ratios are 1 to 1, 2 to 1, 3 to 1, 3 to 2, and 4 to 3. Ohio Gear Co., 1384 E. 179th St., Cleveland, Ohio.

Diaphragm Seals

For use with any make pressure instrument.

Two general classes of these diaphragm seals are available, plain type for non-clogging corrosive service and cleanout type for clogging service, each class being offered for either pipe mounting or flange mounting. Standard line of eight types are suitable for pressures to 600 psi or 2,000 psi depending on type. Units for presuures to 5,000 psi are made for specific applications. All seals use a thin diaphragm to transmit the process pressure through a liquid filled system to the pressure instrument element. This line of seals is intended to assist the increasing use of instruments subject to corrosion or clogging in the chemical and process industry. Mansfield & Green, 1051 Power Ave., Cleveland 14, Ohio.

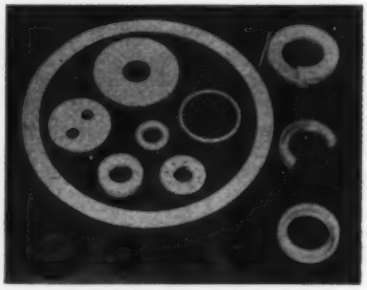
Close-Coupled Pumps

Motor available for all electric circuits and various enclosures.

Type SAC close-coupled small capacity—low head duty side suction pumps are for general service or for use as an integral part of manufacturer's products such as air conditioning units, cooling towers, evaporator coolers, hot water circulators, etc. Available sizes are ¾ in., 1¼ in. and 2 in. in bronze fitted, all iron or all bronze construction. Casings are vertically split. Pump and motor supported by adaptor bracket. Motor is built to NEMA specifications, and equipped with stainless steel shaft. Ball bearings are built into the motor. Aurora Pump Co., 110 Loucks St., Aurora, Ill.

Packing Material

Is not attacked by any acids or alkalis.



A molded form packing material called Chemlon retains all of the chemically inert properties of the familiar braided packing. It is effective to temperatures of 450 F. The special molding process results in high flexibility. Another feature is the electrical properties of the material. Low power factor and low dielectric constant makes it an insulator for high frequency transmission lines where low loss is a necessity. Among the many molded forms furnished are washers, bushings, rings, self sealing "V" crossection rings, ring gaskets, and jacketed (French) gaskets. Crane Packing Co., 1800 Cuyler, Chicago, Ill.

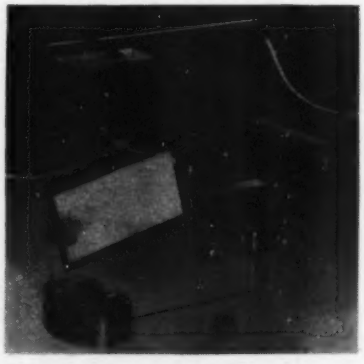
Dump Truck

Designed for bulk handling, the body dumps by gravity.

Battery powered electric end dump burden carrier truck dumps by gravity when body is released by means of a lever convenient to the operator's position. Body dumps cleanly and returns to lever latched position when emptied. Capacity of body is 1½ cu. yd. and truck load capacity is rated at 6000 lb. Mercury Mfg. Co., 4102 So. Halsted St., Chicago 9, Ill.

Coil-Type Clamp

Offers new approach to holding, jigging, clamping and guiding problems.



This unique industrial clamp for maintenance, production, laboratory and display use throughout industry possesses six notable characteristics: automatic takeup, constant clamping pressure regardless of the thickness of the object held, enormous dimensional range between clamp heads, full clamping pressure inherent in single part (without externally applied forces), extreme flexibility in locating clamping pressures (head pressures need not always be opposed), and coil-form heads or jaws which can act as cord or tubing guides or as a base for freely supporting the clamped object. Available standard sizes cover a range of clamping pressures from 2 oz. to 20 lb. in 8 increments. In breadth they range from ¼ in. to 2 in. Hunter Spring Co., 1 Spring Ave., Lansdale, Pa.

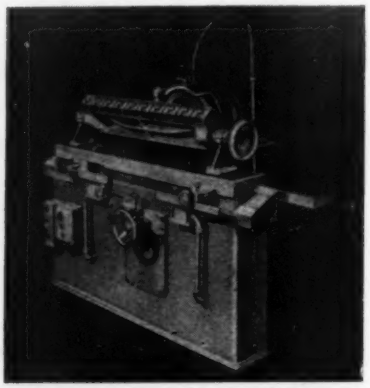
Round Belts

Built without a splice.

Round cross section construction of these round endless belts helps eliminate vibration. Cord pulling members keep stretch at a minimum. Bias cut jackets protect the inner structure and insure flexibility. Belts are recommended for quarter turn, mule, serpentine, cross drives, and other special wheel turning applications. The company claims they can easily be shifted on step-up pulleys for speed changes. For use on drills, high speed hammers, tappers, saws, valve refacers, and other small machinery. U. S. Rubber Co., Rockefeller Center, New York 20, N.Y.

Knife Grinder

Results in smoother table operation and more flexible table control.



The DN Series knife grinder in sizes up to 108 inches in work piece capacity features new type extra wide table ways, machined and scraped to extremely close tolerances for smooth, flexible, accurate table movement. The ruggedly constructed cabinet type base and new type permanently aligned knife bar result in more accurate cutting edges and longer wearing blades. Hanchett Mfg. Co., Big Rapids, Mich.

Motor Starters

Designed for use on farm machinery, small pumps, blowers, etc.

Manually operated starters for a-c motors up to 7½ hp. are furnished in both toggle and push-button types in 2-, 3-, and 4-pole

forms, Size 0 and 1. Feature of these starters is their bimetallic overload protection, which replaces the solder-pot relay and provides accurate response to overloads. Starters in general purpose enclosures can be padlocked; toggle type can be padlocked in both the ON and OFF positions. All live parts are mounted on a strong molded base of high insulating quality. General Electric Co., Schenectady 5, N. Y.

Contactor

Compact, but adequately insulated between all live parts.

Requiring a space of only 15 in. wide, 25 in. deep and 38 in. high, this high voltage air break contactor incorporates three principles of arc extinction. These include two breaks in series, magnetic blowout, and increasing the length of the arc path both horizontally and vertically. Despite its compactness, ground and mechanical sturdiness and accessibility have not been sacrificed, according to the company's engineers. The unit is available with mechanical and electrical interlocks for reversing or dynamic breaking service. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Hydraulic Hand Tool

Capable of cutting both wire rope up to 1¼ inches and mild steel rod up to ¾ inch.

A new tool called the "Guillotine" with shear-type cutting blade is not only capable of cutting both wire rope and steel rod, but also can be adapted to perform crimping, swedging, and bending operations on large-diameter material. Heavy duty design features special forgings and high-tensile steel castings, yet the unit weighs only 40 lb. for easy portability. The tool operates by hand pumping, using the operator's weight, not strength, to make the cut. Manco Mfg. Co., Bradley, Ill.

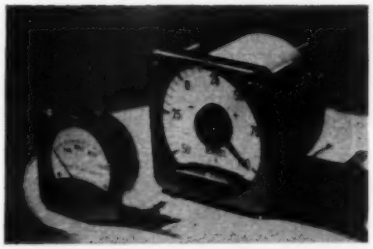
Self-Cleaning Filter

Permits automatic cake removal and disposal.

Elimination of opening the filter at the end of each cycle to sluice the cake from leaves is possible with this "Auto-Sluice" filter. The "auto-sluice" is built into the filter cover and consists of a header into which high pressure spray nozzles are fitted. These are so positioned that the sprays of sluicing liquid strike the cake of each leaf. Air motors impart both rotary and reciprocating motion, assuring thorough cleaning of all surfaces. Performance records have shown that filter cakes up to 35 cf can be removed in as little as 15 minutes with only 70-100 cf of water consumed. Filter cake does not have to be handled. Niagara Filter Corp., Buffalo, N. Y.

Thermocouple Thermometers

Designed for accurate measurement of temperatures.



Included in a line of temperature indicators are the cold-end compensated thermocouple thermometers for measuring temperatures up to 3000 F. and resistance thermometers for temperatures up to 300 F. The thermocouple thermometer is available in two sizes: Type DO-71 with a 3½ inch flange and DW-71 with a 2½ inch flange. These can be used for temperature measurement in industrial applications such as galvanizing vats, melting pots, industrial furnaces, ceramic kilns, etc. Resistance thermometers, the DB-15 long scale and Types DD-6 and DD-7 six-inch rectangular, surface- and flush-mounted are suitable for bearing temperature measurement, generator- and transformer-winding temperature indication, refrigeration and air conditioning testing, drying operations, remote fluid temperature indication, and scientific laboratory work. General Electric Co., Schenectady 5, N.Y.

Floating Vane Pump

Possible to pump liquids, gases and air with positive displacement.

The controlled floating vane principle has been incorporated in pumps manufactured by this company, resulting in a pumping action that has the advantages of a turbine with positive displacement. This action makes it possible to adapt this principle to many new mechanical operations in the pumping field. In the power field, the pump can also be used as a rotary engine or fluid motor with high starting torque and a wide speed range. Chicago Laboratory & Engineering Co., 4140 N. Kedzie Ave., Chicago 18, Ill.

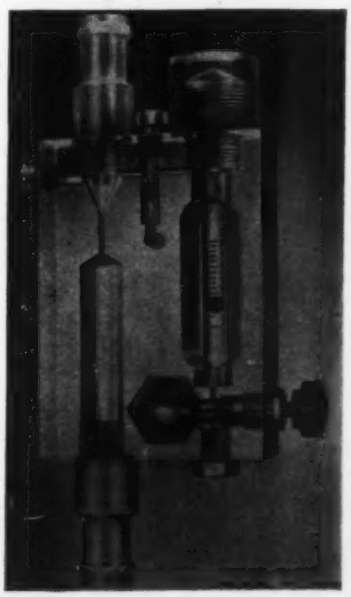
Resin-Coating

Requires no mixing and is flexible when dry.

New type of coating known as B Resin Solution is made for application at room temperature, and is resistant to acids of higher concentrations, resistant to higher liquid temperatures (180-200 F.), and resistant to such solvents as the alcohols and straight chain chlorinated and aromatic hydrocarbons. Laboratory tests indicate the coating to be completely resistant to sulphuric acid of concentration tests up to 90 per cent up to 125 F., while 98 per cent acid at room temperature merely removes the gloss from the film but does not disintegrate it. The solution adheres well to wood, rubber, carbon, and similar materials. For steel and concrete a primer is required. Carboline Co., 7603 Forsythe Blvd., St. Louis 5, Mo.

Chemical Feeder

Treats up to 7000 gal. per day of water directly.



Compact, self-contained chemical feeder called "Feed-Rator" is made of transparent acrylic plastic and simultaneously controls, meters and dispenses relatively small amounts of bactericides, catalysts, disinfectants, fungicides, inhibitors, reagents and other chemicals into a larger stream. The built-in eductor takes the place of a pump, and many highly corrosive chemicals can be fed directly from a container. In a bypass arrangement, using a solution containing 5 per cent active reagent by weight, 5 ppm of the reagent can be delivered to over 14,000,000 gal. of water per day. Fischer & Porter Co., Hatboro, Pa.

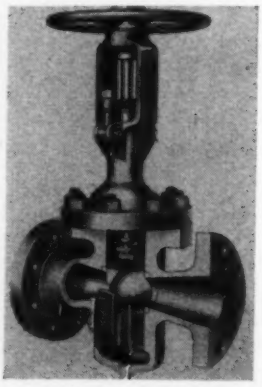
Speed Drive

Provides dynamic braking, overload and low-voltage protection.

An electronic adjustable-speed drive starts, stops, and controls the speeds of ⅛ to ½ hp. d-c motors, operated from single-phase, 50/60 cycle, 220/440-V power sources. The use of an armature control makes possible a speed range of 20 to 1 at constant torque. Separate field rheostats and linestarters are not required. A small, compact control station is supplied for separate mounting at a location convenient to the operator. Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.

Valves

Requires little force to open under high presure and temperature conditions.



Featuring a precision-ground ball, actuated by the exclusive Paul venturiball principle to provide accurate control at all positions from wide open to tight shut, the Paul valve is claimed to have longer valve life and give smoother operation even in the toughest jobs. Straight through, non-turbulent flow; throttling with smooth flow, straight line characteristics; tight shut-off; and free, easy opening and closing without binding or galling are all combined in this valve. Paul Valve Corp., 683 Third Ave., New York 17, N.Y.

Cutting Tool

Combines functions of circle cutter, straight edge, compass, scorer and knife.

The multi-purpose of the "Spearhead Cutter" fills a long standing need for a single tool that combines all major functions of various cutting tools. Materials which are readily cut are aluminum foil, balsam wood, chipboard, corrugated board, fish paper, millboard, plaster board, plastics, etc. It is a good instrument for cutting round gaskets and disks, and is capable of cutting accurately a ¼ in. hole in material ⅛ in. thick. Zimmerman Packing Co., Cincinnati, Ohio.

Plastic Coatings

Have resistance to a wide variety of chemicals and corrosives.

Plastisols and organosols is the result of two years of experience in producing plastisols for insulating electroplating racks. These rubber-like plastic materials are claimed to possess many chemical properties lacking in both natural and synthetic rubbers, and have advantages such as excellent resistance to mechanical abuse such as abrasion, high dielectric strength, and easy handling. Plastisols and organsols are available in paste-like form, and can be molded or applied as coatings to metal, fabric, or paper by dipping, spraying, or brushing. Coatings from .003 in. to .25 inch may be obtained with a single application. United Chromium, Inc., 51 E. 42nd St., New York 17, N.Y.

Briefs . . .

▶ MICROSCOPE ILLUMINATOR—For use with the S-129 pocket microscope which has selective magnification ranging from 40 to 60 power. New illuminator is for required use in dark, inaccessible places, and is attached to microscope tube by means of a heavy spring clip which can be removed. Compact and easy to handle. Buhl Optical Co., 1009 Beech Ave., Pittsburgh 12, Pa.

▶ MAGNET MATERIALS — G-E Alnico 5 DG and G-E Alnico 7 are two permanent magnet materials. Alnico 5 DG provides manufacturers of magnetic separators, motors, and instruments with the highest external and residual induction of any permanent magnet material. Alnico 7 is for application where a high demagnetization force is present, such as in motors, generators, and variable air gap devices. General Electric Co., Pittsfield, Mass.

▶ WRENCHES — Two new steel seat ring wrenches are constructed of heat-treated alloy steel for maximum strength and wear, and make valve maintenance easier. In use, union bonnet ring of valve acts as a guide, bearing against shoulder on the wrench, assuring firm engagement with the seat ring being removed or put in place. The Lunkenheimer Co., Beekman & Waverly Aves., Cincinnati 14, Ohio.

▶ LIFT TRUCK ACCESSORY — A three-sided box fitted with metal rings at the back is attached to special hooks on lift truck carriage when the box is lifted by the forks. For use in plants where quantities of heavy, loose parts must be constantly lifted, moved, stored or delivered. Towmotor Corp., Cleveland, Ohio.

▶ CRANE BLOCK—Lo-Head crane block, in capacities from 10 to 50 tons, is for all types of hook work. Permits 1½ to 2 ft. higher lifts without lengthening boom. Bearing lubrication necessary once each 2,000 hr. Alemite fittings are provided for standard grease gun use. American Hoist & Derrick Co., St. Paul 1, Minn.

▶ SHELVING—All-steel industrial shelving is specifically engineered for installations requiring extreme ruggedness and where heavy loads must be carried. No nuts or bolts are required. Sections are assembled with studs. Precision Equipment Co., 3710 Milwaukee Ave., Chicago, Ill.

▶ PLASTIC COATING—This is made from a plastic specially designed to prevent fading and bleaching, and to absorb sun's heat rays by selectively filtering the sun's harmful rays. Easily applied to transparent surfaces such as windows, glass brick, transoms, etc., and offers heat protection for factories, showrooms, and eye protective devices. Lite Control Products Co., Nutley 10, N.J.

▶ COMBUSTION—Combination gas-oil burners on industrial installations can now be equipped with flame failure safeguards and programming systems to take care of either combination of fuel with complete safety and with a minimum of electrical and mechanical adjustment when changing from the principal fuel to the stand-by fuel. Combustion Control Corp., 77 Broadway, Cambridge 42, Mass.

▶ INSULATION TESTER—Provides complete facilities for taking insulation resistance and dielectric absorption measurements on cables, transformers, rotating machinery, condensers, etc. Breakdown voltages also can be determined with a minimum of damage due to burning. Unit is portable. Radio Frequency Laboratories, Inc., Boonton, N. J.

▶ LIFT TRUCK ATTACHMENT—For handling heavy, loose parts, this special hydraulic dumping device, known as the Skip Box Dumping Device, tilts the box while it is held in an elevated position. Loads up to 4000 lb. can be handled by the new device. Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.

Chipper Knives

(Continued from page 1476)

and fast, as well as to keep the knife cool. By having the coolant strike the wheel at about 45 deg. and one quarter to one half in. above the knife edge, both results are accomplished. The edge of the knife should always be up so that heat will be dissipated by drawing it from the edge into the body of the knife. Using the other method where the bevel is down, heat is drawn from the whole surface being ground and carried to the edge for dispersion. By using this method it is practically impossible to get coolant to the edge of the knife continually. This is where knife troubles usually start.

Burns

There are many types or degrees of burns, some barely visible, and others ranging from straw color through brown, blue and black.

The dark colors generally anneal leaving a soft skin, frequently extending into the cutting edge. In chipping, the edge will round over, break away, and give the appearance of being brittle. The light color burns, iridescent in color, and usually coupled with a highly polished surface showing no grinding marks, tend to harden the knife. This hardness is the result of rehardening in the grinding operation, causing a brittle condition of the edge due to lack of tempering. This also causes the edge to break away and does not add to the life of the knife.

The maintenance of wear plates and bed knives should not be overlooked, for they tie in very closely with the proper functioning of chipper knives and the production of good chips. A rounded edge on the bed knife tends to produce strings and may possibly cause fracture of the knife edge due to wedging action in the cut.

THE LEWELLEN AUTOMATIC CALIPER CONTROL

for paper board mills

OVER 100 MODERN PAPER MILLS DEPEND ON THIS LEWELLEN CONTROL TO MAINTAIN UNIFORM CALIPER. Twenty-seven years of continuous service! That's exactly the score for a number of Lewellen Automatic Controls in paper mills the country over. They operate at any machine speed. They AUTOMATICALLY CORRECT ANY VARIATIONS IN CALIPER due to changes in stock consistency, machine speeds, screen stoppage, or any other cause. They are installed without interrupting production under supervision of Lewellen engineers.

This Lewellen Automatic Caliper is the heart of the Lewellen Automatic Thickness Control. It operates successfully on board thicknesses of from .010" to 1.375" . . . By the makers of the famous Lewellen Variable-Speed Transmission and Variable-Speed Motor Pulley.

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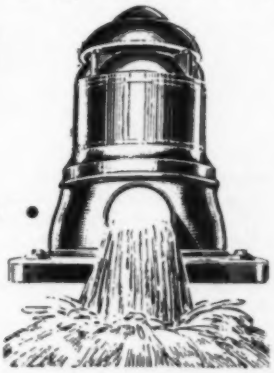

Layne well water systems are designed and built to produce much greater volumes of water than can be obtained from the conventional type of installation. Skillful designing and precision manufacture of the Layne Vertical Turbine pump used in these systems give extra high efficiency. The results are: more water—less cost and longer life for the unit. Furthermore, Layne well water systems are so ruggedly built that upkeep cost is almost nothing.

Thousands are now serving cities and industries throughout the world.

For further information on Layne Well Water Systems—or Layne Vertical Turbine Pumps, catalogs, etc., address

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The Paper Industry New Literature

Book Reviews

THE ANALYTICAL CHEMISTRY OF INDUSTRIAL POISONS, HAZARDS, AND SOLVENTS. 2nd Edition. By Morris B. Jacobs. Published by Interscience Publishers, Inc., 215 4th Ave., New York 3, N. Y. 1949. 788 pages. $12.00.

Progress has been made in industrial hygiene during the past eight years, particularly in the analytical chemistry of industrial poisons, hazards, and solvents. Consequently, changes have been made in each of the eighteen chapters of the second edition. Certain material has been included to supply historical background thus increasing its usefulness where the text is being used for educational purposes.

Classifying industrial poisons into three physical states, namely, gases, liquids, and solids, it is pointed out that entrance of these poisons into the human system is made through the respiratory tract, orally, absorption through the skin, and accidental entrance such as absorption through cuts into the flesh or irritation of the skin and entrance through the ears and eyes. Methods for detecting and determining poisons hazardous in the many industries are discussed. Different instruments and devices for measuring and sampling industrial areas where gases, liquids and solids present problems detrimental to employees, are illustrated and described. A wide variety of chemicals are described and discussed relative to their physiological effect, toxicity, and methods of detection and determination. Some of the compounds discussed are silica, lead, mercury, arsenic and other metals; harmful compounds of sulphur, phosphorus, nitrogen; the halogens; carbon monoxide, carbon dioxide; cyanides and nitriles; aliphatic hydrocarbons; benzene and aromatic hydrocarbons; habgenated hydrocarbons; alcohols, ethers, acids, esters, aldehydes and ketones; phenolic compounds, etc.

Selected references are given in each chapter. Contains appendix and subject index.

WOODY-PLANT SEED MANUAL. Published by Forest Service, U. S. Department of Agriculture. Obtained from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 416 pages. $2.75.

Twenty years of research in handling seed for reforestation work makes this book an authority on the production of seed for forest trees and shrubs. 444 species, useful for forest plantings, farm woodlot plantings, shelter belts and as cover for wildlife, are treated individually on distribution and use, seeding habits, collection, extraction, storage, germination and nursery and field practices. Approximately 1,000 drawings of seeds and seedlings are included. Listed are trees from Abies, the fir, to Zanthoxylum Americanum, the prickly ash.

The co-operative work of hundreds of foresters and forest research men has made this volume possible, and although more than 400 published articles were drawn upon, it is based largely on material never published before. Growing interest in reforestation makes this a valuable book for seed dealers, horticulturists and commercial nurserymen as well as to public conservation agencies.

INDUSTRIAL ELECTRONICS. By Andrew W. Kramer. Published by Pitman Publishing Corp., 2 W. 45th St., New York 19, N.Y. 1949. 311 pages with illustrations. 5½ x 9. $6.00.

This book is for those who have a good knowledge of general physics and engineering but who have had very little training or experience in electronics. It explains in simple concise language, with diagrams and graphs illustrating mechanisms and principles, what electron tubes are, how they were evolved, how they work, and how they can be used in the industry.

The book begins with a brief historical background, including a discussion of the electron theory of matter, and builds up to the fundamental principles of the electron tube in a chronological manner that will give the reader a historical perspective, enabling him to understand the reasons for certain developments.

PRINCIPLES OF SALARY AND WAGE ADMINISTRATION. By A. W. Barbour. Published by National Foremen's Institute, Inc., Box 3, Deep River, Conn. 1949. Cloth bound. 5½ x 8¼. 128 pages. $2.50.

The author convinces the reader that a just and equitable pay rate structure is the main support of a healthy labor relations program, and shows how to build up a satisfactory wage structure. Requirements for a successful program are outlined; wage determination and job evaluation, using community rates as a yardstick are explained; establishing and maintaining the salary and wage administration program are discussed.

Appendices include Factors in Job Evaluation, a point evaluation system developed by the author; Job Descriptions, a description of various jobs and requirements such as warehouse laborer, light and heavy truck drivers, senior laborer, etc.; Position Questionnaire, a typical job questionnaire for obtaining large amounts of job information; and Typical Organization Chart, a useful chart in job analysis that contains a functional statement as well as information about the structure and manning of the department concerned. Graphs and tables are included.

Booklet and Pamphlets

SPECTROPHOTOMETRY. By Kasson S. Gibson. Available from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Circular 484. 48 pages. 25c a copy. Users of spectrophotometers will have a better understanding of their instruments, calibrate and maintain them properly, and be able to guard against numerous errors common in such work by using this guide which contains techniques and data resulting from National Bureau of Standards experience in spectrophotometry. A bibliography of 127 related references are given. Illustrated.

SAFETY CODE FOR MANLIFTS. Available from American Standards Association, 70 E. 49th St., New York 17, N. Y. 24 pages. 55c. This is a consensus of experiences of manufacturers, users, insurance groups, enforcement officials and independent specialists; the code was developed as a guide in drafting regulations for the use of manlifts where their use is now permitted. Construction, maintenance, inspection, and operation of manlifts in relation to accident hazards to industrial works are covered by the code.

THE FEDERAL BUDGET IN BRIEF. For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 45 pages. 20c. Contains recommended financial program by the President of the United States. The President estimates how much money will be received by the Government during the coming year and how much money will be needed to perform the many activities and services which the Congress has authorized.

THE STORY OF FORESTS. Available from American Forest Products Industries, Inc., 1319 Eighteenth St., Washington 6,

CHARGE OF THE ENLIGHTENED BRIGADE!

All furnace charges are under the rigid control of skilled metallurgists, "Our Enlightened Brigade," who supervise every step in the manufacture of Chief Sandusky Centrifugal Castings. The laboratory control of the selection and testing of alloys, and the exclusive use of specified ingot and virgin metals will give you the flawless, uniform castings you need.

Tell your machine builder, "Chief Sandusky."

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SEMI CHEMICAL PLANTS
JENSSEN SO_2 ABSORPTION SYSTEMS

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FOUNDED 1915

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MADE BY

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ORISKANY, N. Y.

Why say Size... when PROSIZE OFFERS SO MANY BIG ADVANTAGES?

● Prominent mills with a total production of thousands of tons of paper a day have found in the Glidden Prosize Process such a superior means of sizing, we are confident that you will want to try it soon. Specifically, on changing from conventional rosin size users have reported that:

—Prosize Process is 200 to 300% more efficient.

—Prosize Process produces a better, more stable size which gives paper uniform resistance to liquids of various types, such as ink, water, meat juices, etc.

—Prosize Process permits duplication of results from run to run on grades never before made because of sizing difficulties.

—Prosize Process minimizes seasonal variations—is highly effective on stocks heated by long beating or hard jordaning.

—Prosize Process permits sizing at a higher or more neutral pH.

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D. C. 16 pages. This picture booklet was designed for use with a film strip by the same name which uses pictures identical to those contained in its pages. It tells about the woodlands of the United States and what they mean to the health, happiness and well-being of people everywhere, and why all of us—boys and girls and men and women—should be careful with fire in the woods.

Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY *lists the following catalogues, bulletins, and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.*

Chemicals. Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio—16 page booklet entitled "The Story of the Chemicals You Live By" describes eight major groups of chemical products and depicts their utilization throughout American industry. Reviewed are soda ash, caustic soda, chlorine, bicarbonate of soda, silicates, calcium carbonates, chromates and specialty chemicals. Illustrated.

Filters. Oliver United Filters Inc., Hazleton, Pa.—4 page Bulletin No. 218 describes the new horizontal rotary filter, which utilizes rather than works against the force of gravity to dewater. Illustrated with photographs and diagrammatic sketch. General data given.

4-page Bulletin No. 216 describes and illustrates the lime mud filter for causticizing systems in pulp mills and chemical plants. A kraft recausticizing plant flowsheet is included. Size table given.

Flame Cutting Equipment. Joseph T. Ryerson & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.—4-page bulletin describes and illustrates the electric-eye flame cutting equipment for intricate and unusual shapes.

Industrial Clamp. Hunter Spring Co., Lansdale, Pa.—4 page bulletin entitled "Neg'ator Clamps For Industry" describes and illustrates the principle, characteristics and applications of the neg'ator clamp which covers clamping problems from the office to the laboratory to the shop.

Caustic Soda Handling. Solvay Sales Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N.Y.—16 x 24 in. wall chart lists suggestions for convenient unloading of tank car shipments of caustic soda, based on experience in manufacture and marketing of caustic soda for many years. Protection of employees, precautions in unloading tank cars, frozen caustic in tank cars, acetic acid for neutralization, and swallowing of caustic soda are subjects covered.

Revolving Joints. Rothern Engineering Co., Inc., 4911 Irving Park Rd., Chicago 41, Ill.—4 page Catalogue No. 10 describes and illustrates cartridge type revolving joints for use in paper mills, textile mills, and processing plants for use in the heating and cooling of slashers, dryer cylinders and rotating rolls.

Centrifugal Pumps. Warren Steam Pump Co., Inc., Warren, Mass.—4 page Bulletin 246 illustrates and describes the two stage Type TL, centrifugal pumps. Sectional view, metal specifications, dimensional drawing and rating table are included.

Save-all. Oliver United Filters Inc., Hazleton, Pa.—4 page Bulletin No. 701 describes and illustrates the vacuum save-all. Typical installation diagrams are shown and list of save-all installations are given.

Polyethylene Application. Schori Process Div., Ferro-Co Corp., 3-11 43rd Rd., Long Island City 1, N. Y.—6 page technical data sheet No. 103D describes the application of polyethylene coatings and films on metal, concrete, woods, etc., by use of the Schori pistol, a flame spraying method.

Splash-Proof Motors. Sterling Electric Motors, Los Angeles 22, Calif.—4 page bulletin describes and illustrates general-purpose electric motors of drip-proof and streamline design, where one best constant normal speed is required.

Caulking Tape. Arnaud Corp., 17 John St., New York 7, N. Y.—1 page Bulletin No. AT-11-49 describes caulking type material for weathertighting pre-fab and other constructions against penetration of moisture, wind or cold air from the outside, and interior heat loss. List prices are included.

Speed Drives. Reliance Electric & Engineering Co., 1088 Ivanhoe Rd., Cleveland 10, Ohio—4 page Bulletin D-2101 describes and illustrates with diagrammatic drawings the ¾ to 2 hp V-S drives. Selection data, prices and dimensions, and how to order are included.

Safety Equipment. Willson Products, Inc., Reading, Pa.—64 page catalogue contains technical and reference material to aid users in selecting the proper type and style of eye and respiratory equipment for specific occupational hazards involved. Comparative charts are shown throughout the catalogue.

Deaerating Heaters. Graver Water Conditioning Co., 216 W. 14th St., New York 11, N. Y.—8 page bulletin outlines the principles of deaeration, describes the design operation and applications of this company's heaters, and explains their distinctive features. Illustrated with photographs and schematic drawings.

Recording Oscillographs. Consolidated Engineering Corp., 620 No. Lake Ave., Pasadena 4, Calif.—16 page bulletin entitled "Consolidated Recording Oscillographs" discusses the applications, operations, and features of this equipment. Sample records of actual applications, detailed assembly drawings, and a section devoted to galvanometers are included.

Joints. Chiksan Co., Brea, Calif.—4 page pamphlet describes and illustrates the Chiksan high temperature swivel joints with the metallic seal. Diagrammmatic sketches and dimensional tables are given.

Pumps. Milton Roy Co., 1300 E. Mermaid Lane, Philadelphia 18, Pa.—4-page Bulletin No. 649 describes, and illustrates with discharge, pressure and typical delivery curves the controlled volume pump that delivers in straight line flow without pulsation.

Aerial Mapping. Lockwood, Kessler & Bartlett, Inc., 32 Court St., Brooklyn 2, N. Y.—12 page brochure entitled "Wings for the Transit" explains basic principles of modern techniques employed in producing aerial topographic maps. Illustrated with photographs, revealing various stages in the preparation of accurate maps from precision aerial photographs.

Bar Screens. Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.—4 page Folder No. 2327 describes and illustrates bar screens for removal of trash and large solids from water and sewage. Specifications are given.

Chemical Feeder. Fischer & Porter Co., Hatboro, Pa.—4 page Catalog 62 describes and illustrates the chemical feeder for liquids and gases. Operation and specifications with cross-section drawing, typical installations, and list of chemicals the feeder handles are given.

Rotary Pumps. Chicago Laboratory & Engineering Co., 4140 No. Kedzie Ave., Chicago 18, Ill.—4 page leaflet describes the principle of controlled floating vane positive displacement rotary pump. Parts listing and assembly photographs are included. Pumping action is illustrated.

Permeability Cups. Thwing-Albert Instrument Co., Penn St. and Pulaski Ave., Philadelphia 44, Pa.—Gives outline views with dimensions of the most popular types of Gravimetric Water Vapor Permeability Cups, wax sealing templates and sample cutting dies.

Adhesives. National Adhesives, 270 Madison Ave., New York 16, N. Y.—Pocket size edition entitled "How to Handle Adhesives for Transparent Films" is a reference book on transparent films. Included is a chart describing properties and characteristics of all principal types of transparent films including cellophane, pliofilm, polyethylene and cellulose acetate.

Mechanical Shaft Seal. Peerless Pump Div., Food Machinery and Chemical Corp., 301 W. Ave. 26, Los Angeles 31, Calif.—2 page Bulletin B-571 describes and illustrates the mechanical shaft seal for installation on equipment moving or transferring liquids requiring a positive shaft seal and for replacement of conventional stuffing boxes where packing has proved unsatisfactory. A chart listing various types of mechanical seals, pumps to which they can be applied, materials of which they are made, liquids and fluids handled, etc. is included. Sectional view of seal is given.

Face-to-Face Valves. R-S Products Corp., Wayne Junction, Philadelphia 44, Pa.—12 page, 2-color catalogue No. 18 describes and illustrates the various types of 50-lb. narrow face-to-face valves, and controls. Also illustrated are stuffing boxes. Also included are description, applications, installation, instructions and list prices of pipe line shock absorber.

Motors. Sterling Electric Motors, Inc., Los Angeles 22, Calif.—4 page bulletin describes the improved slow speed electric power drives. Illustrated with photographs and gear design chart. Included are price sheets.

Strainers. Yarnall-Waring Co., Chestnut Hill, Philadelphia 18, Pa.—4 page Bulletin S-202 describes and illustrates fine screen strainers to prevent rust, scale and dirt from clogging steam equipment. Prices, weights and dimensions are included.

Ladder Treads. J. C. McKinley Co., 549 Crescent Ave., Glenside, Pa.—1 page Bulletin describes E-Z treads, for extension ladders, which are wooden steps supported by full width iron-bracket supports riveted to hangers.

Lift Truck Attachment. Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio—1-page leaflet describes and illustrates the skip box dumping device that is used in connection with lift trucks manufactured by this company.

Heat Exchangers. Ross Heater & Mfg. Co., Inc., Buffalo 13, N. Y.—4-page Bulletin No. 1.7K1 supplies complete data on the first all-stainless steel exchangers. The new series designated Type SSCF, is described by photographs, line drawings and dimension tables in this 3-color, 8½ x 11 publication.

Diaphragm Seals. Mansfield & Green, 1051 Power Ave., Cleveland 14, Ohio—1-page leaflet describes and illustrates with a cross section drawing the M & G Diaphragm seals for prevention of corrosion or clogging of pressure instruments. Different types are illustrated.

Drum Truck. Morse Mfg. Co., Syracuse 2, N. Y.—1-page Bulletin No. 44-949 describes and illustrates the Morse "Rock-A-Drum" vertical drum truck for positioning heavy drum loads of paints, chemicals, emulsions and all types of liquids.

Materials Handling Attachments. Hyster Co., Portland 8, Ore.—28-page catalogue presents model views, diagrams, specifications, action pictures, cartoons and explanatory text of the various special purpose additions to basic materials handling machines.

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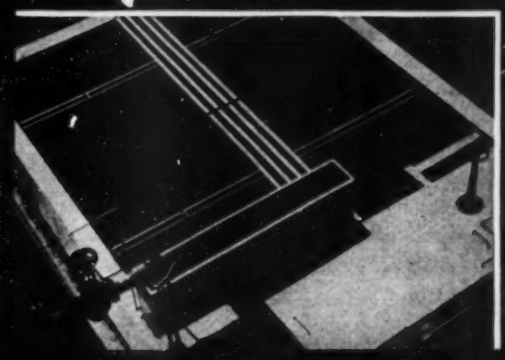

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In A Hurry?

This section offers a quick and direct method of contacting professional and business service consultants.

Gate Valves. Kennedy Valve Mfg. Co., Elmira, N. Y.—Circular 102 furnishes an informative description of the Figure 27 and Figure 30 line of standard bronze gate valves. Design features are explained in detail with a large sectional drawing providing easy visual reference. Service ratings and a table of sizes and dimensions are included.

Valve-Seat Wrenches. The Lunkenheimer Co., Beekman & Waverly Aves., Cincinnati 14, Ohio—4-way folder No. 579 describes and illustrates steel seat ring wrenches for valves. List prices are given.

Hydrafiners. Shartle Bros. Machine Co., Middletown, Ohio—8-page bulletin entitled "Hydrafiner No. 1" illustrates and describes the Hydrafiner. Layout templates, and detailed sketch with an identification listing are included.

Jordan Shell Fillings. Shartle Bros. Machine Co., Middletown, Ohio—4-page bulletin explains the construction of "Bulldog" shell fillings for all makes of jordans. Diagram of construction is shown.

Materials Handling. Lyon-Raymond Corp., 8062 Madison St., Green, N. Y.—16-page booklet contains illustrations and descriptions of 12 different types of equipment of various manufacturers for "Positioning." Two illustrative process charts are given as examples for determining the extent of handling operations from time of receipt of materials to shipment of the finished product. Also illustrated with photographs of equipment.

Wheel Casters. The Bassick Co., Bridgeport, Conn.—8-page folder contains latest information on "V" grooved-wheel casters for angle iron track. 8 photographs show these casters in actual use by different industries. Cross sectional designs, and catalogue listings are included.

Hand Spring Winder. Blaner Mfg. Co., 629 Meek St., Sharon, Pa.—3-way folder describes and illustrates the hand spring winder for making springs quickly and efficiently without the use of a lathe. Prices included.

Fluid Drives. Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.—28-page catalogue and engineering data book No. 2385 is a progress report on this company's Electrofluid Drive, "ED" type. It covers types, sizes, arrangements and dimensions of units available; features of construction, advantages to the user, selection tables; typical examples of fluid drive selections; and photographs of installations.

Wax Resin. Hercules Powder Co., Wilmington, Delaware—4-page folder lists properties, applications, and other pertinent information about Paracols, a wax emulsion for paper and board. The three stability classifications are briefly described, and a list of typical applications and advantages which Paracol gives to various types of paper and paperboard are included.

Corrosion Resistance. The Duriron Co., Dayton 1, Ohio—12 page General Catalog M condenses data published in 54 separate bulletins on corrosive resisting equipment and alloys. Features, capacities and sizes, and available alloys are given on all items. Arranged alphabetically for easy reference.

Proportioning Pumps. Lapp Insulator Co., Inc., Process Equipment Div., LeRoy, N. Y.—Bulletin 295 contains description and specifications of the newly designed Pulsafeeder Chemical proportioning pumps with ceramic wet-end parts.

Generators. Electric Machinery Mfg. Co., Minneapolis 13, Minn.—8-page Bulletin 2200-PRD-196 explains the points to look for when ordering generators. Construction features and what they mean in terms of continuous, economical operation are pointed out and illustrated. Installation photographs of large slow-speed engine-type generators are shown.

Metal Detector. Allis-Chalmers Mfg. Co., Milwaukee, Wis.—20-page Bulletin 14B7217A describes the design and operation of the metal detector produced by this company. Illustrated with application drawings, installation photographs and diagrammatic sketches.

Pumps. The Duriron Co., Inc., Dayton 1, Ohio—4-page Bulletin 816 describes and illustrates with cross section drawings the corrosion-resisting, self-priming Durcopump. Curve drawing showing lift vs. time in seconds is included.

Resin. Hercules Power Co., Inc., Wilmington, Dela.—4-page Bulletin S-46 entitled "Cellolyn 502" presents basic facts about this non drying alkyd resin for top quality baking whites and for sunlight-resistant clear lacquers. Two tables show typical pigmented composition and typical physical constants.

Thermometers. Precision Thermometer and Instrument Co., 1537 Brandywine St., Philadelphia 30, Pa.—16-page Bulletin "E" contains data on liquid-in-glass industrial thermometers. Graphic pages illustrate all basic models, sizes, forms and attachments with simplified application data to enable the user to select the proper thermometer for any industrial application.

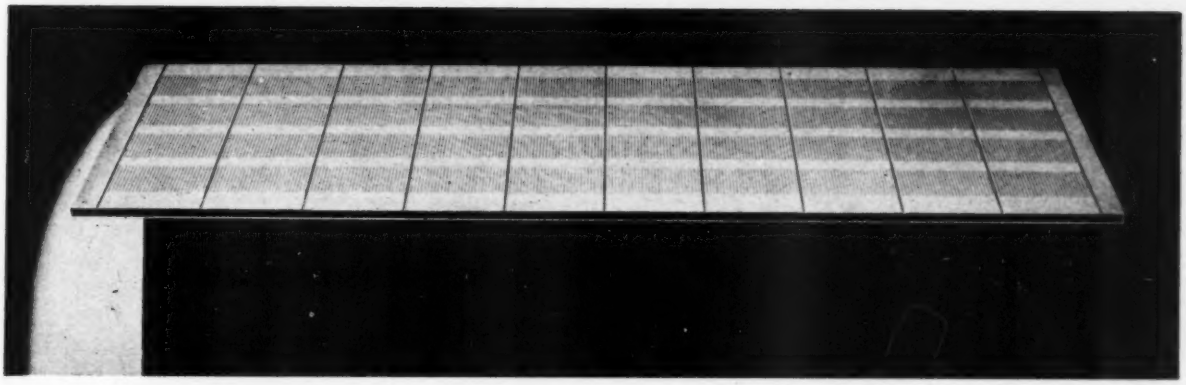
Valves. Paul Valve Corp., 683 Third Ave., New York 17, N. Y.—16-page 2-color Bulletin No. 103 is a well illustrated catalog that covers principle of operation and engineering data on the complete line of this company, including whistle valves, bar stock valves, cast steel and stainless steel valves and forged valves.

Corrosion Resisting Sheet. The Duriron Co., Inc., Dayton 1, Ohio—8-page Bulletin 502 describes the new Durimet 20 corrosion resisting sheet and plate for ducts handling corrosive fumes. Listed are common corrosives to which Durimet 20 is resistant. List of names and dates of installations of this product are included.

Crane Block. American Hoist and Derrick Co., St. Paul 1, Minn.—4-page catalogue describes the new American Lo-Head crane block for all types of hook work. Prices are listed.

Capacitor Motor. General Electric Corp., Schenectady 5, N. Y.—12-page publication No. GEA-5401 contains information about the Tri Clad single-phase capacitor motor for use wherever power supply demands single-phase operation. Detailed photographs and dimensional table included.

Pumps. De Laval Steam Turbine Co., Trenton 2, N. J.—4-page catalogue "LG" describes and illustrates with cut-away drawings, six different types of IMO rotary pumps.



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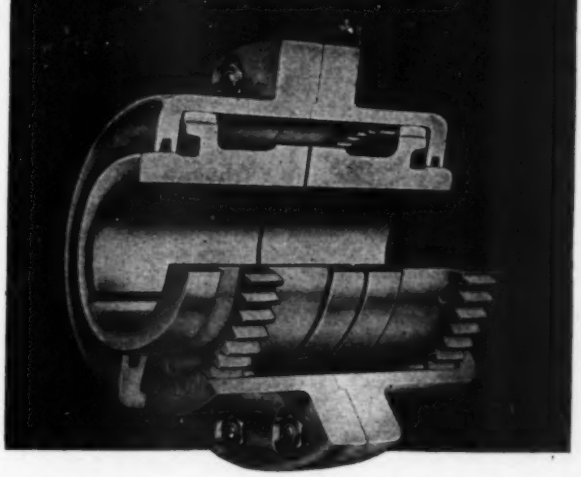
POOLE



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Which Garlock rod packing is recommended for general use against steam pressures up to 300 lbs.?

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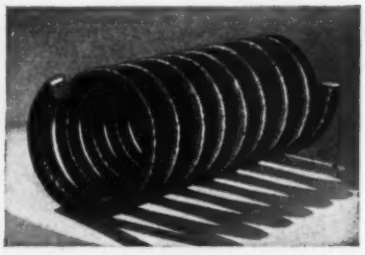
You can depend on GARLOCK 150 for superior service because of its uniform, *quality controlled* construction. Start now to reduce maintenance and replacement costs on your rod packings—*standardize* on GARLOCK 150 for general steam service.

GARLOCK 150 spiral (illustrated) and GARLOCK 125 coil are made in 12½′ lengths and in packing sizes from ⅛″ to 1½″, advancing by sixteenths. Ring form—GARLOCK 200.



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GARLOCK
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MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

Quotations to consuming mills, cents per pound or dollars per hundred pounds, f.o.b. New York, follow:

	per cwt.
Blue Overalls	6.25 to 6.50
Corduroy, Men's	3.75 to 4.00
Corduroy, Ladies'	3.75 to 4.00
Washables, No. 1	3.00 to 3.25
Percales	6.00 to 6.25
Light Prints, No. 1	5.50 to 5.75
Khaki Cuttings—	
Bleachable	4.50 to 4.75
Unbleachable	4.00 to 4.25
New White Canvas	11.00 to 11.50
New Mixed Blacks	3.50 to 3.75
Canton Flannels, Bleached	10.75 to 11.00
Shirt Cuttings—	
New White No. 1	11.00 to 11.50
White Shrunk	10.25 to 10.75
Silesias No. 1	7.00 to 7.50
New Unbleached	11.00 to 11.50
Fancy	5.25 to 5.50
Linen Cuttings—	
American	8.00 to 8.25
White	14.00 to 15.00
Grey	13.50 to 14.00

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

	per cwt.
Roofing—	
No. 1	1.40 to 1.45
No. 2	1.30 to 1.35
No. 3 and No. 4	1.05 to 1.15
Twos and Blues—	
Repacked	3.00 to 3.25
Thirds and Blues—	
Repacked	2.75 to 3.00
Miscellaneous	2.25 to 2.50
Whites, No. 1—	
Repacked	4.50 to 4.75
Miscellaneous	3.25 to 3.50
White, No. 2—	
Repacked	3.25 to 3.50
Miscellaneous	2.75 to 3.00

RAGS (Foreign)

ex dock New York City

NEW RAGS

	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)

ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shopperies	

ROPE and BAGGING

f.o.b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	5.75 to 6.00
Domestic	6.50 to 6.75
Wool Tares—	
Light	6.50 to 7.00
Heavy	7.00 to 7.50
No. 1 Scrap Bagging	5.50 to 5.75
Manila Rope—	
No. 1 large	5.50 to 5.75
No. 1 small	4.50 to 4.75
Sisal Rope—	
No. 1 large	5.00 to 5.25
No. 1 small	4.50 to 4.75
New Burlap Cuttings	7.00 to 7.50
Jute Threads—	
Foreign (Nom.)	6.50 to 7.00
Domestic	6.00 to 6.50
Strings—	
No. 1 sisal	4.50 to 4.75
No. 2 sisal	4.00 to 4.25
Soft jute	4.25 to 4.50
Mixed	2.50 to 2.75

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

Shavings—	per ton
Hard White Env. Cuts	95.00 to 100.00
Hard White, No. 1	75.00 to 80.00
Soft White No. 1	70.00 to 75.00
Soft White, one-cut	85.00 to 90.00
Soft White, Misc.	60.00 to 65.00
Fly Leaf, No. 1	30.00 to 32.50
Fly Leaf, Woody No. 1	22.50 to 25.00
No. 2 Mixed Col. Woody	17.50 to 20.00
Flat Stock—	
No. 1 Heavy Books and Magazines, Repacked	25.00 to 27.00
Mixed Books	13.00 to 14.00
Ledger Stock—	
No. 1 White	45.00 to 50.00
No. 1 Mixed (Colored)	35.00 to 40.00
Manilas—	
New Env. Cuttings	60.00 to 65.00
New Env. Cuts, One-Cut	—
Extra Manilas	35.00 to 40.00
Manila Tab Cards, Free of Ground Wood	85.00 to 70.00
Colored Manila Tab Cards	35.00 to 40.00
Kraft—	
New Envelope Cuttings	60.00 to 65.00
Tripled Sorted No. 1 100%	30.00 to 35.00
New 100% Cor. Cuts	30.00 to 35.00
No. 1 Old Assorted	25.00 to 27.50
News—	
White Blank	55.00 to 60.00
Overissue	17.00 to 18.00
No. 1 Folded	13.00 to 14.00
Old Corrugated Containers	15.00 to 16.00
New Jute Corrugated Cuts	20.00 to 22.00
Mill Wrappers	10.00 to 11.00
Box Board Chips	7.00 to 8.00
No. 1 Mixed Paper	7.00 to 8.00

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—	
Lump, cwt.	4.05—
Ground, cwt.	3.80—
Powdered, cwt.	4.20—
Blanc Fixe—	
Pulp, bulk, ton	80.00—
Dry, barrels	85.00—
Bleaching Powder—	
Drums, cwt.	4.50 to 5.00
Casein (Domestic Standard)	
20-30 mesh (bags), lb.	
80-100 mesh (bags), lb.	23.00 to 24.00
Argentine, lb.	20.00 to 20.50
China Clay—	
Domestic Filler	
Bulk (mine) ton	10.00 to 15.00
Domestic Coating	
Bulk (mine) ton	15.00 to 25.00
Imported (ship side)	
Bulk (lump) ton	22.00 to 30.00
Chlorine—	
Tank cars (wks) cwt.	2.40 to 2.70
Gelatine (silicin), lb.	1.25 to 1.35
Glyc. (C.P.) drums, lb.	.24¾ to .25¼
Litharge, powd. bbl. lb.	.13¾ to .14¾
Rosin (Gum)—	New York, per 100 lbs.
E	7.20—
F	7.20—
G	7.20—
WWX	7.90—
Rosin (Wood), carlots, F.O.B. South	5.50—

MARKET QUOTATIONS

Salt Cake—	
Dom. bulk (wks) ton	22.00 to 24.00
Imp. bulks on dock—(Atl. ports) ton (Nom.)	25.00—
Soda Ash—	
Bulk (works), cwt.	1.00 to 1.15
Paper Bags, cwt.	1.25 to 1.35
Soda (Caustic)—	
Solid drums, cwt.	3.05 to 3.10
Ground and flake, drums, cwt.	3.45 to 3.50
Sodium Silicate—	
60 deg. 55 gal. drums, (works) cwt.	1.65 to 2.05
40 deg. 55 gal. drums, (works), cwt.	.80 to 1.45
Starch—	
Pearl, 140 lb. bags, cwt.	4.72—
Pearl, barrels, cwt.	4.72—
Paper, (Sp.) bags, cwt.	4.72—
Powdered, barrels, cwt.	4.83—
Sulphur (Crude)	
(Mine) bulk, long ton	18.00—
Talc—	
Dom. 100 lb. bags (mine) ton	22.00 to 28.00
Canadian	33.00 to 45.00
Titanium Dioxide—	
Barium Pig. bbls., lb.	.19½ to .21
Calcium Pig. bbls., lb.	.19½ to .21
Zinc Sulphide, bbls., lb.	11.50 to 11.75

WOOD PULP

Prices, dollars per short, air dry, ton, with inland freight allowed, are:

Bleached sulphite, Swed.	118.00 to 122.00
Bleached sulphite, Finnish	118.00—
Bleached sulphite, dom.	118.00—
Easy bleaching sulphite	—
Unbleached kraft, Finn	—
Unbleached sulphite, Swed.	100.00 to 105.00
Unbleached sulphite, Fin.	—
Unbleached sulphite, dom.	108.00—
Unbleached kraft, Swedish	82.50—
Unbleached kraft, northern	82.50—
Unbleached kraft, southern	80.00—
Bleached sulphate, Swedish	126.00 to 128.00
Bleached soda, domestic	113.00—
Sulphite screenings, dom.	40.00 to 50.00
Sulphate screenings, dom.	40.00 to 50.00
Groundwood, domestic and Canadian	65.00 to 67.50

PAPER

f.o.b. New York City

Boards—	per ton
Binders	94.00—
Chip	70.00—
Chip, tube and can	75.00—
Chip, full blending	77.50—
Chip, sgl. mla. lined	77.50—
Coated, white patent .016	110.00—
.020 and heavier	100.00—
Kraft liner	95.00 to 100.00
Filled News	72.50—
Container	85.00—

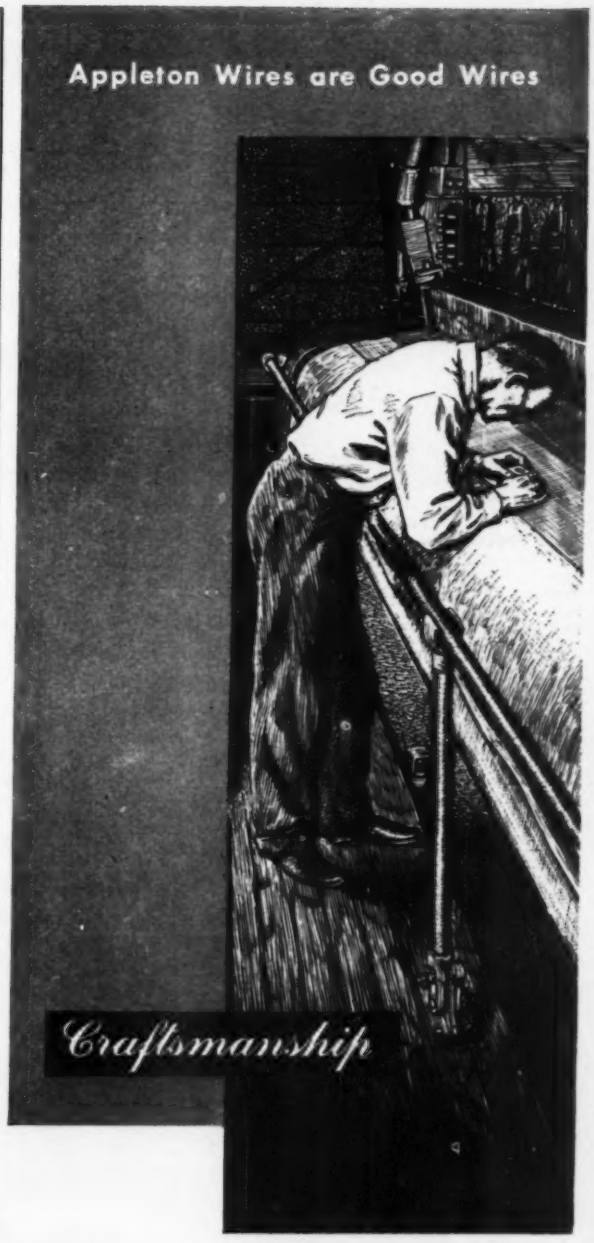
Book Papers—f.o.b. mill with quantity, weight, manufacturing and other differentials allowed:

(Per cwt. in ton lots)
Uncoated (Untrimmed)

Book, White (M. F.)—	
A Grade E. F.	15.65—
B Grade E.F.	14.90—
A Grade S. C.	15.90—
B Grade S. C.	15.40—
No. 2 Uncoated Offset 4 sides, White	—
Machine Coated White (Trimmed 4 sides)	
No. 1 Glossy	19.75—
No. 2 Glossy	19.25—
No. 3 Glossy	17.75—
No. 4 Glossy	—
No. 2 Offset	15.15—
C1S Litho (Varnish)	—
C1S Litho (Non-Varnish)	—

Writing Papers—f.o.b. mill with some, quantity, packing and other differentials allowed:

Rag Content Bond— (In Ton Lots)	per cwt.
Extra 100% Rag	51.40—
100% Rag	44.55—
75% Rag	33.90—
50% Rag	23.10—
25% Rag	14.85—
Rag Content Ledger— (In Ton Lots)	per cwt.
Extra 100% Rag	52.65—
100% Rag	45.65—
75% Rag	35.15—
50% Rag	29.40—
25% Rag	26.15—
Sulphite Bond—	per cwt.
Air dry, watermarked	—
No. 1 watermarked	17.50—
No. 2 watermarked	16.60—
No. 4 watermarked	15.80—
Sulphite Ledger—	per cwt. Zone
No. 1 watermarked	18.80—
No. 2 watermarked	18.05—
No. 4 watermarked	17.50—
Glassine (f.o.b. mill)—	per cwt.
Embossed (25 lb. up)	—
Bleached (25 lb. up)	—
Unbleached (25 lb. up)	—
Greaseproof— Bleached (25 lb. up)	—
Unbleached (25 lb. up)	—
News—	per ton
Rolls, Standard (Contract)	100.00 to 103.00
Rolls (Spot)	(Nominal)
Sheets	110.00—
Tissues (Carlots)—	per ream
White No. 1	1.55—
White No. 2	1.20—
Bleached Anti-Tarnish	—
Colored	—
Anti-Tarnish Kraft	1.37½—
Manila	1.60—
Napkins, semi-crepe (12½ lb. to M shts.) per cs.	.90—
Napkins, full crepe and emb'sed (12½ lb. to M shts.) per cs.	.80—
Toilet, Bleached (M. shts.) per cs.	6.95—
Toilet, Unbleached (M. shts.) per cs.	5.75—
Towels—	per case
Bleached	5.25—
Unbleached	4.50—
Wrappings (Kraft)—	per cwt.
Super-Standard	8.00 to 8.90
No. 1 Wrapping	7.00 to 7.50
Standard Wrapping	6.35 to 6.75
Standard Bag	6.00 to 6.25
Variety Bag	—
Wrappings (Sulphite and Bleached Kraft)— (Rolls, f.o.b. mill)	
Bleached Papers—	per cwt.
M.F. & M.G. Waxing, 20 lb. (Carloads only)	—
(10,000 lb.)	—
Drug wrapp., 35 lb.	—
Unbleached Papers—	
Com. Gr. Butch. 40 lb.	—
No. 1 Butchers	—
No. 1 Imit. Parch. & Dry Fin. Groc. Sulphite, 30 lb.	—
No. 2 Imit. Parch. & Dry Fin. Groc. Sulphite, 30 lb.	—
Steam Finish, 50 lb.	—
Water Finish, 50 lb.	—
Manilas—	
Envp. Mla., Sub. 16-40 (No. 1)	—
Envp. Mla., Sub. 16-28 (No. 2)	—
Envp. Mla. (Prices based on large sheets untrim'd ream marked, in bdls.)	—
Wrapp Mla. 35 lb. up—	
No. 1	—
No. 2	—
M.G. Sulphite and Kraft (other than Waxing)	
Grade B20 lb.	—
Grade A-22 lb.	—



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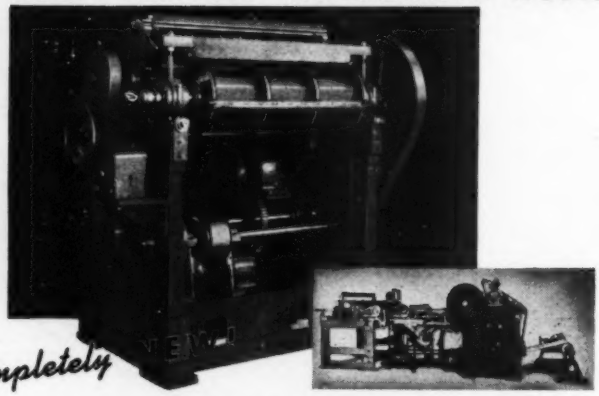

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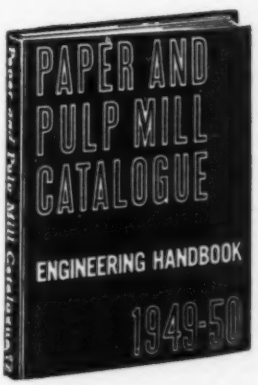

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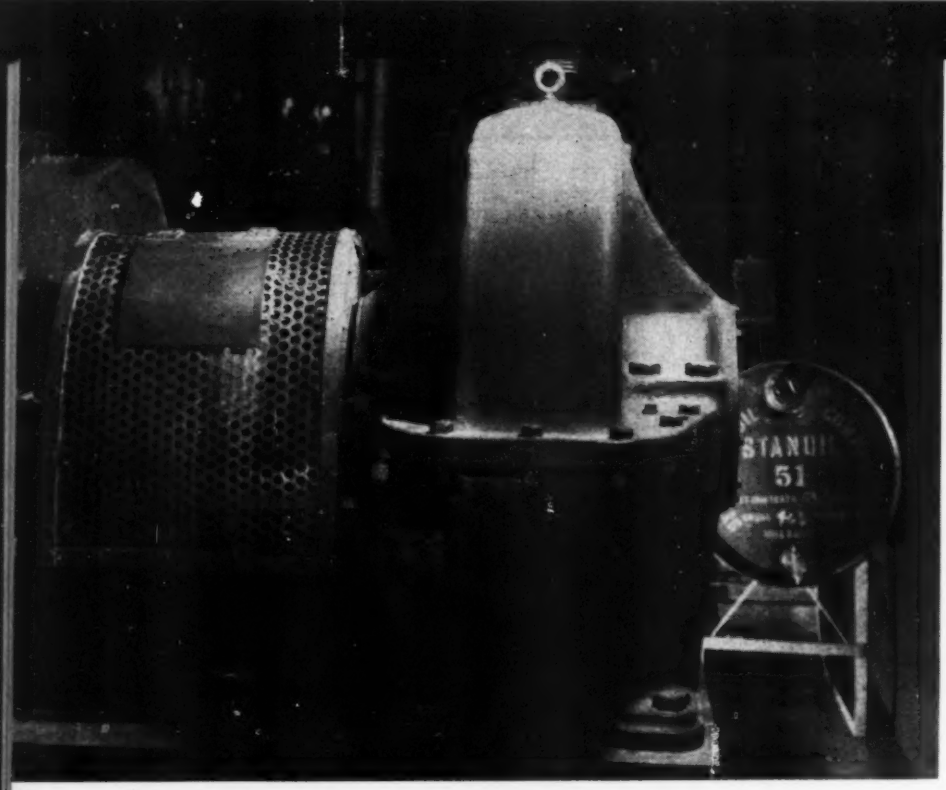

Arrest the dirty work in reduction gears

THE dirty work starts in reduction gears when the lubricating oil begins to oxidize and break down under the attack of heat and air. Oxidation products, uniting with dust and other foreign matter, form deposits which interfere with proper lubrication and cause gear wear.

STANOIL
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You can head off this dirty work—avoid costly cleaning jobs, oil changes, and gear wear—by using STANOIL Industrial Oil. The high stability of STANOIL prevents deterioration by heat. Its low-carbon-forming base oil keeps gears free from carbon. An inhibitor curbs acidity growth which would cause the formation of emulsions and sludge.

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What's YOUR problem?

● To help you solve particular lubrication problems or gain greater all-around economy, Standard Oil has set up an industrial service that's unrivalled in the Midwest. This service puts at your immediate disposal the help of a highly trained, experienced lubrication specialist and a reliable supply of petroleum products. All you need do is phone or address a card to the nearest Standard Oil Company (Indiana) office. In fact, why not start right now by arranging for the visit of the lubrication specialist assigned to your plant. With his help, find how many different oils in your plant can be replaced by STANOIL Industrial Oil on such applications as:

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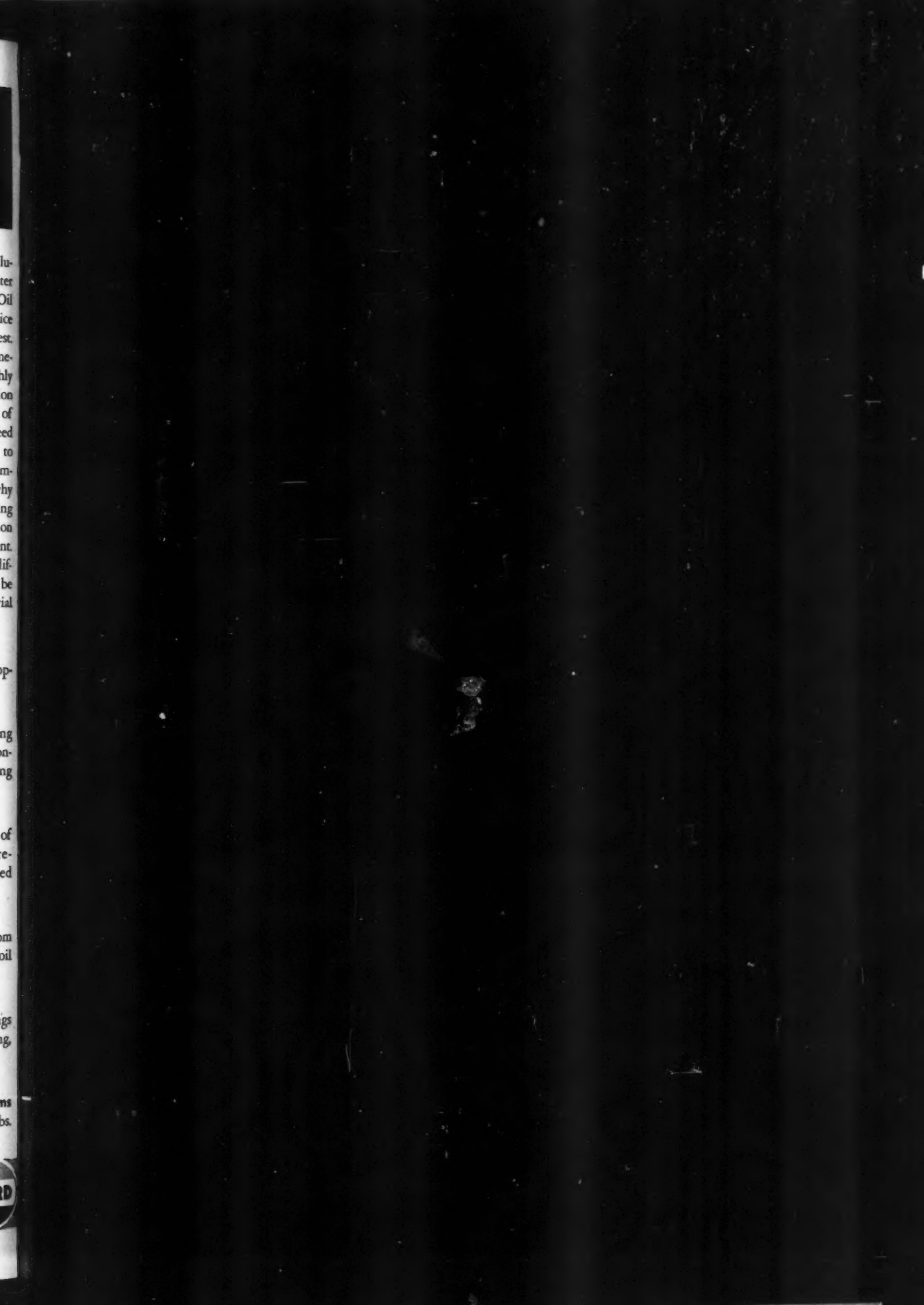

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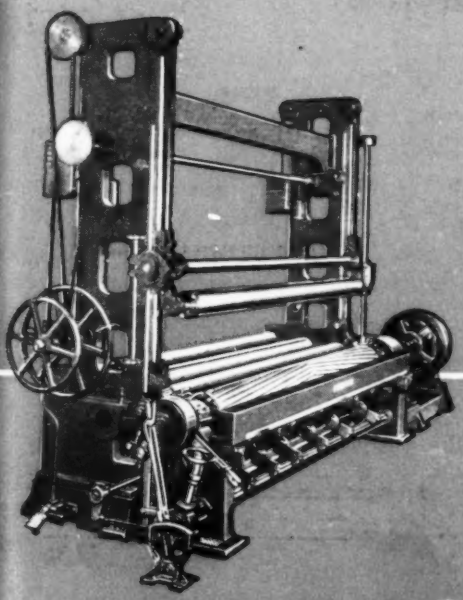
This Chinese "foot" varies from 11.4 to 15.8 inches, depending on the locality. No user of a Langston Slitter and Roll Winder is ever "short measured" on dependability, long life, speedy production of first-quality rolls.
Samuel M. Langston Company, Camden, N. J.



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Langston

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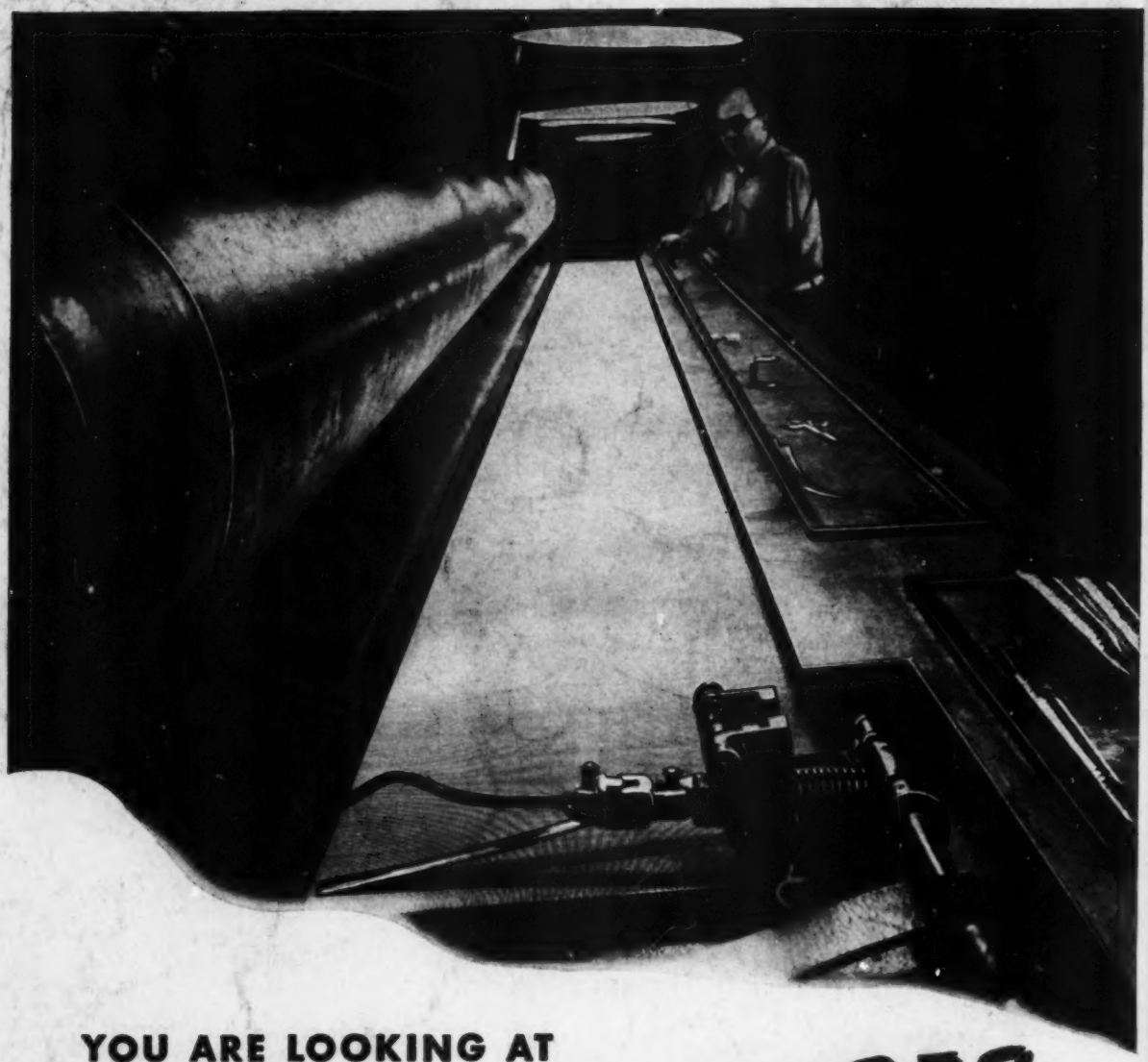

YOU ARE LOOKING AT

17,250 WIRES

This is a 230-inch loom, set up in 75 mesh. That means you are looking at 17,250 warp wires.

Back and forth across these wires flies a bobbin carrying shute, or filler, wire. Each time it traverses the width of the loom another shute wire is added to the woven fourdrinier wire cloth at the right.

About 75,000 shute wires must be woven into the warp wires to make one fourdrinier wire a hundred feet long.

From the first operation to the last, our skilled craftsmen watch over every wire to make sure that the paper manufacturer will get a top-quality cloth in every Eastwood Wire.

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EASTWOOD-NEALLEY CORPORATION

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